Academic Program Description Form

University Name: Tikrit University

College/Institute: Faculty of Education for Pure Sciences

Scientific Department: Department of Mathematics

Program Name: Academic or Vocational Bachelor

Name of the final degree: Bachelor of Mathematics

Study system: Annual

Description: Beginning of the academic year 2024-2025

Date of filling the file: 1/24/2025

Signature:

Name of the Head of Department:

Dr. Fatimah Mahmood Mohammed Ahmed Jassim

Date: 28/1/2025

Signature:

Name of the scientific collaborator:

Dr. Mohammed ahmed Jassim

Date: 28/1/2025

Check the file by:

Quality Assurance Division and performance evaluation

Division Director Name Quality Assurance and Performance Evaluation: Dr. Moammer Abdalaziz Kamel

Date: 28/1/2025

Signature:

Professor Doctor
ALi Abdul Majeed Shihab
College of Education
for Pure Sciences

Authentication Mr. Dean

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

Academic Program and Course Description Guide

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Introduction:

The Department of Mathematics aspires to achieve excellence and leadership in the fields of pure and applied mathematics through the delivery of a comprehensive academic program that covers a wide range of disciplines, including algebra, mathematical analysis, numerical and functional analysis, probability, number theory, topology, differential equations, and geometry. The program seeks to keep pace with the rapid scientific and educational developments locally and globally by continuously enhancing academic and research performance.

The Department is committed to preparing graduates with profound mathematical knowledge and strong pedagogical and educational skills, enabling them to work competently and creatively in the field of education. It also equips students with critical thinking, effective communication, and teamwork skills. Furthermore, the program aims to instill a spirit of initiative and empower students to establish their own educational and mathematical projects, thereby diversifying career opportunities beyond traditional employment paths.

The Department's vision is grounded in fostering a stimulating and supportive learning environment that offers faculty and academic staff continuous training and professional development opportunities, thereby enhancing their competencies and enabling their active contribution to both teaching and research.

Additionally, the program encourages student participation in scientific and extracurricular activities that foster creativity, develop presentation and communication skills, and provide opportunities to engage in mathematical and

research projects that serve the community and contribute to sustainable development.

Through investment in research and innovation, the Department strives to transform knowledge into real added value, reinforcing its position as a leading academic institution dedicated to preparing distinguished graduates capable of contributing effectively to scientific and educational advancement.

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.

1. Program Vision

Raising the level of performance in the fields of algebra, numerical analysis, mathematical analysis, functional analysis, probability, number theory, topology, differential equations and geometry, with the necessity of taking into consideration keeping pace with the development witnessed by the higher education renaissance by providing the best services and equipment for academic cadres of faculty members, providing training and development opportunities for technicians and administrators, and graduating job creators instead of job seekers by qualifying them in the pre-graduation and basic education stages on the skills of research, development, innovation, the spirit of initiative and entrepreneurship, and involving students in everything that would develop their skills and help them to be creative and innovative, not just concerned with presentation, and transforming knowledge into wealth through research, development and innovation.

2. Program Mission

The Mathematics Program seeks to prepare qualified graduates equipped with logical and scientific reasoning skills, as well as the ability to analyze, infer, and solve problems. In addition, the program develops research competencies that enable graduates to contribute to advancing knowledge and serving the community. It is dedicated to providing students with a solid foundation in both pure and applied mathematics, supported by the use of modern teaching methodologies and advanced educational technologies at both undergraduate and graduate levels.

The program also emphasizes the development of academic and practical skills that allow graduates to integrate effectively into the labor market and participate actively in scientific, technological, industrial, and service sectors. This is achieved by fostering creativity, innovation, and entrepreneurship. Moreover, the program supports research and development through encouraging advanced academic studies and building research partnerships with universities and scientific, industrial, and service institutions at the local, regional, and global levels.

In addition, the program strives to meet the evolving needs of society for qualified scientific professionals, contributing to comprehensive and sustainable human development by transforming knowledge into economic and social value. It also seeks to prepare future leaders capable of assuming responsibilities in teaching and research, and in training new generations of distinguished educators and researchers.

This mission is realized through providing a stimulating academic and research environment that promotes active learning, critical thinking, and scientific inquiry, as well as offering high-quality academic programs aligned with the latest global trends, accreditation standards, and international benchmarks—ensuring graduates are well-prepared to compete nationally, regionally, and globally.

3. Program Objectives

1. Provide students with a strong scientific foundation that enables them to apply mathematical knowledge in analyzing real-world problems and proposing effective solutions.
2. Prepare graduates with creative and effective teaching skills, qualified to contribute to the advancement of the educational process across various academic levels.
3. Supply the Ministry of Education and educational institutions with well-trained specialists in teaching mathematics at intermediate, secondary, and high school levels.
4. Strengthen students' ability to utilize scientific knowledge and apply it effectively in research, practical applications, and community service.
5. Enable graduates to further develop their academic and professional skills to successfully integrate into academic, scientific, and technical environments.
6. Qualify students to pursue graduate studies (Master's and Ph.D.) in mathematics and related fields, thereby contributing to the enrichment and advancement of scientific research.
7. Prepare highly qualified scientific cadres capable of supporting academic and research institutions at both local and regional levels.

4. Program Accreditation

Ministry of Higher Education and Scientific Research

5. Other external influences

Is there a sponsor for the program?

6. Program Structure				
Program Structure	**Number of Courses**	**Study Unit**	**Percentage**	**Notes**
Institutional Requirements	**5**	١٢	**7%**	
College Requirements	**12**	٥٠	**29%**	
Department Requirements	**21**	١١٠	**64%**	
Summer Training				
Other				

Notes may include whether the course is basic or optional.*

7. Program Description				
Year\Level	**Course code**	**Course Name**	**Credit Hours**	
			Theoretical	**Practical**
1st	101MTFM	Fundamental of Mathematics	٤	
1st	١٠٢MTCA	Calculus	٥	
1st	103MTLA	Linear Algebra	٤	
1st	104MTGP	General Physics	٢	
1st	105MTFE	Fundamental of Education	٢	
1st	106MTCI	Computer I	١	2
1st	107MTDH	Democracy and Human Rights	٢	
1st	108MTAL	Arabic Language	٢	
1st	109MTEP	Educational Psychology	٢	

1st	110MTEL	English Language	١	
1st	111MTAC	Advance Calculus	٤	
1st	112MTGT	Group Theory	٣	
2nd	113MTCII	Computer II	١	2
2nd	114MTEL1	English Language	١	
2nd	215MTAG	Systems of Axioms and Geometry	٣	
2nd	216MTRM	Methodology	٢	
2nd	217MTOD	Ordinary Differential Equation	٤	
2nd	٢١٨MTDP	Development Psychology	٢	
2nd	219MTEA	Educational Administration	٢	
2nd		Baath Regime Crimes in Iraq	٢	
3rd	320MTMA	Mathematical Analysis	٤	
3rd	321MTNA	Numerical Analysis	٤	
33d	322MTPD	Partial Differential Equation	٤	
3rd	323MTPS	Probability and Statistics	٤	
3rd	324MTRT	Rings Theory	4	
3rd	325MTCP	Counseling and Psychological Health	٢	
3rd	٣٢٦MTTM	Teaching Methods	٢	
4th	٤٢٧ MTGT	Module	٤	
4th	428MTMS	Mathematical Statistics	٤	
4th	429MTCA	Complex Analysis	٤	
4th	430MTPE	Practical Education	٢	
4th	٤٣١MTME	Measurement and Evaluation	٢	
4th	432MTMO	General Topology	4	
	433MTDT	Differential Topology	4	

8. Expected learning outcomes of the program	
Knowledge	
Cognitive objectives	1- The student should remember the information and laws given in the curriculum. 2- The student should understand the curriculum topics and the mathematical problems related to them. 3- The student should be able to apply what he has learned in solving mathematical problems. 4- The student should be able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5- The student should compose problems related to the curriculum topics and then reach a correct solution. 6- The student should have ideas about the curriculum material and know how to derive the appropriate laws to solve it.
Skills	
General and qualifying skill objectives	1-Learn about modern teaching methods and techniques 2-Know everything new in the field of physics to keep pace with the rapid development in this specialty 3-Hold scientific exhibitions, seminars and workshops
Program skill objectives	1- Teaching skill in mathematics 2- The student should have the ability to employ practical skill in analyzing information and logical inference 3- The student should have the ability to link causes to effects
Values	
	Innovation and continuous improvement. Competing in the education industry and adhering to standards of excellence.

٩. Teaching and learning strategies

1 - The lecture method
2- The lecture method
3 -Practical application in laboratories
4 -Discussion and dialogue Flipped learning

١٠. Evaluation methods.

1- Weekly reports
2- Practical tests
3- Weekly, monthly and annual tests
4- Graduation research

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	**Lecturer**
Prof. Ali Abdul Majeed	Mathematics	Topology				
Dr. Prof. Fatimah Mahmood Mohammed	Mathematics	Topology				
Prof. Dr. Ghassan Ezzulddin Arif	Mathematics	Applied Mathematics				
Prof Dr Raheam A Al-Saphory	Mathematics	Applied Mathematics / Control Systems and Analysis				
Prof.Dr. Sinan Omar Ibrahim	MAthematics	Rings Theory				
Prof.Dr.Mahera Rabee Qasem	Mathematics	Algebra				
Prof. Raad Awad Hameed	Mathematics	Partial Differential Equations				
Prof. Nada Khalid Abdullah	Math	Modules Theory			✓	
Assistent professor Qasim Nasir Husain	Mathematics	Mathematical Statistics				
Assistant Professor Dr. Marwa Abdallah Salih	Mathematics	Algebra				
Assistant Professor Dr. Laila Khaled Khader	mathematics	Mathematics teaching methods				
Assist. Prof. Anas Abbas Hijab	Mathematics	Functional analysis				
Assistant professor Muayyad Mahmood Khalil	Mathematics	Differential Equations				
Asst.Prof.Dr. Samer Raad Yaseen	Mathematics	Intuitionistic Topology				
assistant professor Shadia majeed noori	Mathematics	Measure theory				
Lecturer Dr.Ahmed M.Azeez	Mathematics	Functional Analysis				

Instructor: Ans Ibrahim AlQassab	Computer Science	Information Technology				
Assistant lecturer Ali Mahmood Khalaf	Computer science	Information Technology				
Lecturer. Israa Refat Hajim	Arabic Language	Language				
Lecturer/ suha jumaa hammad	Mathematics	Complex analysis				
Ast.Lec. Haidar Swadi Hamad	Mathematics	Deference Equations				
Assistant Lec. Nawras Nazar Sabry	Mathematics	Topology				
Inaam hasany mohamed	Department of Educational and Psychological Sciences	Master of Geography Teaching Methods				
A.P Ahlam Youssif Abdullah	Mathematics	Control systems				
Hanan Abdul Jabar Asaad	Mathmatical	Numerical Analysis				
A.T.Samar watheq omar	Mathematical	Applied Mathematics				
Assistant lecturar : Azhar shareef islubee	Mathematics	Differential Equations				

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4

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

Course Description Form

1. Course name
Calculus-First stage
2. Course code
Bachelor's degree
3. Semester/Year
2023-2024
4. Date this description
1\11\2023
5. Available forms of attendance
Daily
6. Number of study hours (total) / Number of units (total)
150 hours
7. Name of the course administrator (if more than one name is mentioned)
ghasanarif@tu.edu.iq & anas_abass@tu.edu.iq
8. Course objectives

Subject objectives:	culus is one of the main topics in mathematics and is based on the subject of differential and integra. Evaluate the limit of a function, including one-sided and two-sided, using numerical and algebraic techniques and the properties of

	limits. - Determine whether a function is continuous or discontinuous at a point. - Calculate the derivative of an algebraic function using the formal definition of the derivative. - Explain the concept of derivative as an "instantaneous rate of change" and the slope of the tangent line; find derivatives of functions using the constant, power, sum, difference, product, quotient, and chain rules, and using implicit differentiation. - Find the derivative of algebraic, exponential, and logarithmic functions. - Determine maxima and minima in optimization problems using the derivative. - Sketch the graph of functions using the first and second derivatives to determine intervals where the functions are decreasing and increasing, maximum and minimum

	values, intervals of concavity and points of inflection. □ Solve applied problems involving tangent lines, rates of change and related rates. □ Apply the concept of derivative to solve applied problems involving marginal cost, profit and revenue, and growth and decay problems. □ Find definite and indefinite integrals by using general integral formulas, integration by substitution, and integration tables. □ Use integration techniques to find the area under a curve and the area between two curves. □ Use calculus to analyze revenue, cost, and profit. □ Use integration in business and economic applications
9. Teaching and learning strategies	
The strategy:	Students completing this course will be able to find a limit of a function graphically. □ Students completing this course will be able to compute the derivative of an

	algebraic function. □ Students completing this course will be able to find a (linear) Marginal Cost function and interpret it. Students completing this course will be able to find the area between two curves.

Course Structure

Weeks	Hours	Required Learning	Outcomes Unit or Topic	Learning Method	Evaluation Method
First	**5**	**Introduction to real number, absulute value open interval**	**preface**	**The lecture**	**General questions, discussion, explanations and solving examples**
Second	**5**	**Study inequality and real line of set solution**	**inequalities**	**The lecture**	**General questions, discussion, explanations and solving examples**
Third	**5**	**Limit point and properties**	**Limit point**	**The lecture**	**General questions, discussion, explanations and solving examples**
Fourth	**5**	**Domian & range, graph and its**	**functions**	**The lecture**	**General questions,**

		properties			discussion, explanations and solving examples
Fifth	5	Solutions of the exercises	Solutions of the applied exercises in this chapter	The lecture	General questions, discussion, explanations and solving examples
Sixth	5	Limits and continuous and dis-continuous fuction with inverse	continuous	The lecture	General questions, discussion, explanations and solving examples
Seventh	5	Definition, some theorems and properties	Derivatives	The lecture	General questions, discussion, explanations and solving examples
Eight	5	Higher order	Derivatives	The lecture	General questions, discussion, explanations and solving examples
Ninth	5	Roll's theorem, L'hopital's and Tayler expansion	Derivatives	The lecture	General questions, discussion, explanations and solving examples
Tenth	5	Implict derivatives	Derivatives	The lecture	General questions, discussion, explanations and solving examples
Eleventh	5	Solutions of exercises	Solutions to various and applied chapter	The lecture	General questions, discussion,

			exercises		explanations and solving examples
Twelfth	5	Student Evaluation	Monthly exam	-	-
Thirteenth	5	Tangent lines, approximation, area, ..etc.	Application of derivatives	The lecture	General questions, discussion, explanations and solving examples
Fourteenth	5	Student Evaluation	Monthly exam	The lecture	-
Fifteenth	5	Voulumes	Application of derivatives	The lecture	General questions, discussion, explanations and solving examples
Sixteenth	5	Geometric plane	Application of derivatives	The lecture	General questions, discussion, explanations and solving examples
Seventeenth	5	Solutions of exercises	Solutions to various and applied chapter exercises	The lecture	General questions, discussion, explanations and solving examples
Eighteenth	5	Trigenometric functions	Special functions	The lecture	General questions, discussion, explanations and solving examples
Nineteenth	5	Logarithem and exponentional functions	Special functions	The lecture	General questions, discussion, explanations and solving examples
Twenty	5	Hyper-trigenometric functions	Special functions	The lecture	General questions,

					discussion, explanations and solving examples
Twenty-one	**5**	**Inverse Trigenometric functions**	**Special functions**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-two	**5**	**Inverse Hyper-Trigenometric functions**	**Special functions**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-three	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**-**
Twenty-four	**5**	**Definition with some examples**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-five	**5**	**Indefined integral**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-six	**5**	**Some methods of integral 1**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-seven	**5**	**Some methods of integral 2**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-eight	**5**	**Some methods of integral 3, 4**	**Integration**	**The lecture**	**General questions,**

					discussion, explanations and solving examples
Twenty-nine	**5**	**Some methods of integral 6**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty	**5**	**Improper integral and applications**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-one	**5**	**Area, Vulumes, Center of moment and etc.**	**Integration**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-two	**5**	**Student Evaluation**	**Monthly exam**	**-**	**-**

10. Course Evaluation.

Daily exams score: 10,

Homework and reports score: 10,

Monthly exams score: 30;

Final exam score: 50

11. Learning and teaching references

Required textbooks	1-Thomas' Calculus, 4th edition, Joel hass, christopher hell and maurice d. weir :8-chapter.

Main References	- Foundation of Analysis: The Arithmetic of Whole Rational, Irrational and Complex Numbers, by **Edmund Landau**. - Hass, J., Heil, C., & Weir, M. D. (2017). Thomas' calculus. - Thomas Jr, G. B. (2018). INSTRUCTOR'S SOLUTIONS MANUAL. - Hass, J. (2008). *Thomas' calculus*. Pearson Education India. Anton, H., Bivens, I. C., & Davis, S. (2021). *Calculus*. John Wiley & Sons. - Thomas, C. (1996). Introduction to differential calculus. *Sydney: University of Sydney*.
Recommended supporting books and references (scientific journals, reports...)	The most important books and references on Calculus available in the Central Library.
Electronic references, website.	1- Reliable websites. 2- Libraries websites in some international universities

Course Description Form

1. Course name
Linear Algebra I
2. Course code
Bachelor's degree
3. Semester/Year
2023/2024
4. Date of preparation of this description
3/9/2023
5. Available Forms of Attendance
Daily
6. Number of hours (total) / Number of units (total)
120 hours
7. Name of the course administrator (if more than one)
Name: Dr. Marwa Abdullah Saleh Dr. Marwa Abdullah Saleh **Email: marwahabdullah747@gmail.com**
.^Course objectives

This description provides a branch of mathematics that deals with the study of vector spaces and linear transformations, as the subject of vector spaces is a central topic in modern mathematics and is frequently used in abstract algebra and .functional analysis	• **.^Course objectives**

Teaching and learning strategies	
• -Manage the lecture in an applied manner related to the reality of daily life to attract the student to the subject of the lesson without moving away from the core of the subject to make the material flexible and able to be understood and analyzed. • -Assign the student some activities and group assignments. • -Allocate a percentage of the grade for daily assignments and tests.	Strategies

10.Course Structure

Evaluation method	Learning method	Unit or topic name	Required Learning Outcomes	Hours	Week
General questions, discussion and examples	Lecture	Matrices	Introduction to Matrices	٤	First
General questions, discussion and examples	Lecture	Matrices	rations on matrices	٤	second
General questions, discussion and examples	Lecture	Matrices	Some Special Matrices/Algebraic Properties of Matrices	٤	third
General questions, discussion and examples	Lecture	Matrices	Matrices with an inverse / Methods for finding the inverse of a	٤	fourth

			matrix		
General questions, discussion and examples	Lecture	Matrices	Definition of the order of a matrix	٤	Fifth
General questions, discussion and examples	Lecture	Matrices	Determinants	٤	sixth
General questions, discussion and examples	Lecture	Matrices	Properties of determinants	٤	seventh
General questions, discussion and examples	Lecture	Matrices	Basic proofs of determinants	٤	eighth
General questions, discussion and examples	Lecture	inear equations	Introduction to Linear Equations	٤	ninth
General questions, discussion and examples	Lecture	inear equations	Systems of linear equations	٤	tenth
General questions, discussion and examples	Lecture	inear equations	Methods for solving systems of linear equations/Kauss method	٤	eleventh
General questions, discussion and examples	Lecture	inear equations	Methods for solving systems of linear equations/Kauss-Gordon elimination method	٤	XII
General questions, discussion and examples	Lecture	Vectors	Euclidean-nonlinear space	٤	thirteenth
General questions, discussion and examples	Lecture	Vectors	Scalar multiplication of vectors/non-vector multiplication	٤	XIV
General questions, discussion and examples	Lecture	Vectors	Vector space	٤	XV
General questions,	Lecture	Vectors	Vector subspace	٤	XVI

discussion and examples					
General questions, discussion and examples	Lecture	Vectors	Linear combination	٤	XVII
General questions, discussion and examples	Lecture	Vectors	Vectors that generate a vector space	٤	XVIII
General questions, discussion and examples	Lecture	Vectors	Vector subspace	٤	nineteenth
General questions, discussion and examples	Lecture	Vectors	Linear combination	٤	XX
General questions, discussion and examples	Lecture	Vectors	Vectors that generate vector space	٤	twenty-first
General questions, discussion and examples	Lecture	Vectors	Vector Proofs	٤	Twenty-second
General questions, discussion and examples	Lecture	ar correlation and linear independence	Linear correlation and linear independence	٤	Twenty-third
General questions, discussion and examples	Lecture	se and dimension	Base and dimension	٤	Twenty-fourth
General questions, discussion and examples	Lecture	space and column space	Line space and column space	٤	Twenty-fifth
General questions, discussion and examples	Lecture	Linear transformations	Linear transformations	٤	Twenty-sixth
General questions, discussion and examples	Lecture	Linear transformations	Some types of linear transformations	٤	Twenty-seventh
General questions, discussion and examples	Lecture	Linear transformations	Kernel and span	٤	Twenty-eighth
General questions, discussion and examples	Lecture	Linear transformations	Matrix as a linear transformation	٤	twenty-ninth

General questions, discussion and examples	Lecture	Linear transformations	The kernel of a linear application	٤	thirtieth
eneral questions, discussion and examples	Lecture	ıear conversions	Eigenvalues and eigenvectors	٤	thirty-first
-	-	Monthly exam	Student evaluation	٤	thirty-second

11. Course evaluation
Daily exams grade: 10, Assignments and reports: 10, Monthly exams grade: 30

١٢.Learning and Teaching Resources

Elementary Linear Algebra with Applications by Bernard Kolman and David R. Hill	Required textbooks (syllabus if available)
- Elementary Linear Algebra with Applications by Bernard Kolman and David R. Hill (9th edition)by 2017 - 2010 مقدمة فى الجبر الخطى/تاليف بيرنارد كولمان	Main references (sources)
most important books and resources on ordinary differential equations found in the Central Library.	Recommended supporting books and references (scientific journals, reports...)
- -Online resources. - -Library websites of some international universities.	Electronic references, websites

Course Description Form

1. Course Name:
Fundamental Mathematics
2. Course Code:
Bachelors
3. Semester / Year:
2023-2024
4. Description Preparation Date:
10/9/2023
5. Available Attendance Forms:
Daily
6. Number of Credit Hours (Total) / Number of Units (Total)
120 hours
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed M. Azeez Email: Ahmedm.azeez@tu.edu.iq
8. Course Objectives

Course Objectives	The student acquires the concept of expressions and mathematical logic and ways to deal with them algebraically Clarifying the concept of groups, relationships, applications, their types and theories related to them Giving the student experience in dealing with basic numbers Knowing how to create natural numbers The student learns about the most important basics of mathematics such as mathematical systems and how to build them and the relationship between them The student learns how to create integers The student learns how to create fields of rational, real and complex numbers The student realizes the basis of the operations he performs on numbers, especially integers, through studying an introduction to number theory

9. Teaching and Learning Strategies	
Strategy	• Managing the lecture in a practical manner related to the reality of daily life to attract the student to the topic of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed. Assigning the student some group activities and assignments. Allocating a percentage of the grade for daily assignments and tests.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	4	The Sets	Inclusion concepts, Equal sets, Subsets	Lecture	General questions and discussion
Second	4	The Sets	Proper subset, Empty set, Universal set	Lecture	General questions and discussion
Third	4	The Sets	Union, Intersection, Disjoint set, Symmetric difference	Lecture	General questions and discussion
Forth	4	The Sets	Power set, Complement set, Algebra of sets	Lecture	General questions and discussion
Fifth	4	The Sets	Power set, Complement set, Algebra of sets	Lecture	General questions and discussion
Sixth	4	Statements	Tautology, Contradiction and Arguments	Lecture	General questions and discussion
Seventh	4	Statements	Open sentence, Quantified statements	Lecture	General questions and discussion
Eighth	4	Statements	Open sentence, Quantified statements	Lecture	General questions and discussion
Ninth	4	Statements	Open sentence, Quantified statements	Lecture	General questions and discussion

Tenth	4	Statements	Algebraic operations on statement	Lecture	General questions and discussion
Eleven	4	Statements	Prove the equivalent statements by algebraic operation	Lecture	General questions and discussion
Twelve	4	Concept of Ordered Pair	Cartesian product, Relations	Lecture	General questions and discussion
Thirteen	4	Relation	Definition for inverse relation with examples	Lecture	General questions and discussion
Fourteen	4	Relation	Definition for composition relation with examples	Lecture	General questions and discussion
Fifteen	4	Relation	Some theorems About inverse and composition relation	Lecture	General questions and discussion
Sixteen	4	Concept of Ordered Pair	Reflexive and Symmetric relation	Lecture	General questions and discussion

Seventeen	4	Concept of Ordered Pair	Transitive relation	Lecture	General questions and discussion
Eighteen	4	Concept of Ordered Pair	Equivalence relation Partition of the set	Lecture	General questions and discussion
Nineteen	4	Concept of Ordered Pair	Partially ordered set	Lecture	General questions and discussion
Twenty	4	Concept of Ordered Pair	Totally ordered set	Lecture	General questions and discussion
Twenty one	4	Functions	Definition of function with example	Lecture	General questions and discussion
Twenty two	4	Functions	Composition functions with theorems and examples	Lecture	General questions and discussion
Twenty three	4	Functions	Type of Functions	Lecture	General questions and discussion

Twenty four	4	Functions	Type of Functions	Lecture	General questions and discussion
Twenty five	4	Functions	Inverse function	Lecture	General questions and discussion
Twenty six	4	Sequence	Definition for Sequence and examples and theorems	Lecture	General questions and discussion
Twenty seven	4	Natural number	Piano axioms	Lecture	General questions and discussion
Twenty eight	4	Natural number	Relation on natural numbers and some theorems	Lecture	General questions and discussion
Twenty nine	4	Integer number	Structure for integer number	Lecture	General questions and discussion
Thirty	4	Rational number	Structure for rational number	Lecture	General questions and discussion

Thirty one	4	Group	Semi group Subgroup Homomorphism Isomorphism	Lecture	General questions and discussion
Thirty two	4	Real number	Structure for real number	Lecture	General questions and discussion

11. Course Evaluation

Daily exams score: 10, Homework and reports score: 10, Monthly exams score: 30

Final exam score: 50

12. Learning and Teaching Resources

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

Course Description Form

1. Course name	
Arabic language	
2. Course code	
Bachelor's degree	
3. Semester/Year	
2023-2024	
4. Date of preparation of this description	
3/9/2023	
5. Available Forms of Attendance	
/	
6. Number of class hours (total) / Number of units (total)	
60 hours	
7. Name of the course administrator (if more than one)	
Name: Esraa Refaat Hagem **Email: esraa.r.hajim@tu.edu.iq**	
8. Course objectives	
Course Objectives	a. Strengthening students' language ability b. Gain full knowledge of the basics of the language c. Explain the importance of Arabic poetry while explaining the grammatical rules of the language d- Knowing the basic rules and being able to use and apply them
9. Teaching and Learning Strategies	

Strategy	- In order for the student to obtain complete information covering the learning and teaching strategy in order to achieve the basic purpose of the curriculum, which is focused on the student's familiarity with the curriculum, which is characterized by the fact that the student must realize and understand the rules, and this requires a special approach that depends mainly on developing the student's grammatical and spelling abilities and how to apply them to Qur'anic texts and poetic texts and not fall into the melody

١٠. Course structure

Evaluation method	Learning method	Module name or topic	Desired Learning Outcomes	Hours	Week
eral Questions & Discussion	ecture	h Al-Duha and the most important meanings contained in the verses	The student understands the topic	2	first
eral Questions & Discussion	ecture	ammad Mahdi al-Jawahiri	The student understands the topic	2	second
eral Questions & Discussion	ecture	nr ibn Kalthoum	The student understands the topic	2	third
eral Questions & Discussion	ecture	he story of Dhul Qarnain	The student understands the topic	2	fourth
eral Questions & Discussion	ecture	bu al-Tayyib al-Mutanabbi	The student understands the topic	2	Fifth
eral Questions & Discussion	ecture	Punctuation	The student understands the topic	2	sixth
eral Questions & Discussion	ecture	Speech and its divisions	The student understands the	2	seventh

			topic		
ıeral Questions & Discussion	ıecture	oun shortened, diminished, and elongated	The student understands the topic	2	eighth
ıeral Questions & Discussion	ıecture	Z and Za	The student understands the topic	2	ninth
ıeral Questions & Discussion	ıecture	Cutting and connecting symbols	The student understands the topic	2	tenth
ıeral Questions & Discussion	ıecture	ddle and extreme accent	The student understands the topic	2	eleventh
ıeral Questions & Discussion	ıecture	rect and defective verbs	The student understands the topic	2	XII
ıeral Questions & Discussion	ıecture		The student understands the topic	2	thirteenth
ıeral Questions & Discussion	ıecture	ıbject and object nouns	The student understands the topic	2	XIV
ıeral Questions & Discussion	ıecture	as and its sisters	The student understands the topic	2	XV
ıeral Questions & Discussion	ıecture	n and its sisters	The student understands the topic	2	XVI
ıeral Questions & Discussion	ıecture	oken and open an	The student understands the topic	2	XVII
ıeral Questions & Discussion	ıecture	ject and adverbs	The student understands the topic	2	XVIII
ıeral Questions & Discussion	ıecture	tiator and subject	The student understands the topic	2	nineteenth
ıeral Questions	ıecture	Number and	The student	2	XX

& Discussion		enumerated	understands the topic		
ıeral Questions & Discussion	,ecture	ıe story of Moses and the Green	The student understands the topic	2	twenty-first
ıeral Questions & Discussion	,ecture	Morphological balance	The student understands the topic	2	wenty-second
ıeral Questions & Discussion	,ecture		The student understands the topic	2	Twenty-third
ıeral Questions & Discussion	,ecture	›ors of the triple verb	The student understands the topic	2	wenty-fourth
ıeral Questions & Discussion	,ecture	minal and verbal sentences	The student understands the topic	2	Twenty-fifth
ıeral Questions & Discussion	,ecture	Abstract and augmented verbs	The student understands the topic	2	Twenty-sixth
ıeral Questions & Discussion	,ecture	›en and bound ta	The student understands the topic	2	venty-seventh
ıeral Questions & Discussion	,ecture	Passive verb	The student understands the topic	2	wenty-eighth
ıeral Questions & Discussion	,ecture	Passive verb	The student understands the topic	2	wenty-ninth
ıeral Questions & Discussion	,ecture	Exception	The student understands the topic	2	thirtieth
ıeral Questions & Discussion	,ecture	gative and active participle	The student understands the topic	2	thirty-first
-	-	Monthly quiz		2	hirty-second

Course evaluation	
y exams grade: 10, Assignments and reports: 10, Monthly exams grade: 30 , Final exam grade: 50	
Learning and Teaching Resources	
• Required textbooks (syllabus if available)	Vafi Grammar_ Ibn Aqeel Commentary_ Al-Kafi Exchange_ Arabic Literature
• Main references (sources)	veh's book
• Recommended supporting books and references (scientific journals, reports...)	ortant Books and Special Sources
• Electronic references, websites	na al-Hawamah_ Artashaf al-Darb

Course Description Form

1. Course Name:
First stage: New Headway Beginner
2. Course Code:
Bachelor's degree
3. Semester / Year:
2023-2024
4. Description Preparation Date:
29/1/2024
5. Available Attendance Forms:
Class lectures
6. Number of Credit Hours (Total) / Number of Units (Total):
60 hours / 14 Units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Lect. Israa Bahram Azeez Assist. Lect. Noor Arkan Galeb Email: Israa.bahram@88tu.edu.iq Noor.arkan89@tu.edu.iq
8. Course Objectives

Course Objectives	1. Enabling the students to: ❖ Read and write in English ❖ Follow the basic rules of the English language. ❖ Understand the ways of life in English-speaking societies, especially the British and American, and some of the differences between them. ❖ Communicate linguistically. ❖ Understand the language of films and the internet. 2. Teaching the students English language in smooth and simple manner. 3. Urging the students to solve the exercises and apply the rules. 4. Encouraging them to continue learning English language lessons by following programs in English and listening to conversation. 5. Developing the Students' skills in expressing himself and his ability to speak orally.

	6. Developing the students' conversational skills and reading skills through the exercises in the student book

9. Teaching and Learning Strategies

Strategy	• The standard method (giving lectures). • The text method. • Brainstorming method. • Some modern strategies.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
November 1 Unit One & Two	1	Learning greetings and self-introduction	Introduction use auxiliary /am/is/are In speaking and reading. Unit two: use the subjects /he/she/they/we /I/you In practice grammar.	Lecture	Discussion and exam
November 2 Unit Three	1	Learning to use pronouns in the correct way	using negative and positive on short answers and Using possessives in adj. and plural nouns	Lecture	Discussion and exam
November 3 Unit Four and Five	1	Asking and answering personal information	Teaching present simple And Teaching past simple	Lecture	Discussion and exam
December 1 Unit Seven	1	Learning to talk about favorites	Teaching present		Discussion and

And eight		- Learning about Furniture	continuous and Teaching past continuous	Lecture	exam
December 2 Unit Nine	1	Learn to talk about the past	Teaching past simple – irregular verbs	Lecture	Discussion and exam
December 3 Unit Ten	1	Learning about sport and leisure	Teaching past simple in using questions and negatives	Lecture	Discussion and exam
December 4 Unit Eleven	1	Talking about everyday problem	Using can in positive and negatives	Lecture	Discussion and exam
January 1 Unit Thirteen	1	Talking about everyday problem	Teaching model verbs	Lecture	Discussion and exam
January 2 Unit Fourteen	1	Talking about food	Teaching adverbs	Lecture	Discussion and exam
January 3	1	Asking questions	using would like in questions	Lecture	Discussion and exam
January 4	1	Learning about countable and uncountable words	Teaching some/any and the differences	Lecture	Discussion and exam
February 1	1	talking about preferences	Teaching like and would like	Lecture	Discussion and exam
February 2	1	Learn to talk about daily activity	Teaching present simple	Lecture	Discussion and exam
February 3	1	Learn about the colors	Teaching present continuous	Lecture	Discussion and exam
February 4	1	Asking and answering questions	Teaching Yes/No questions	Lecture	Oral Test
March 1	1	Talking about the future	Teaching future plans	Lecture	Oral Test
March 2	1	Learning about nouns	Teaching countable and uncountable	Lecture	Discussion and exam
March 3	1	Learning when to use (the)	Teaching the determiner	Lecture	Discussion and

			(the)		exam
April 1	1	Learning when to use (the)	Teach the determiners a/an	Lecture	Discussion and exam
April 2	1	Using possessive to talk about belongingness	Using possessives in adj. and plural nouns	Lecture	Discussion and exam
April 3	1	Using prepositions in the right way	Teaching prepositions	Lecture	Discussion and exam
April 4	1	Using model verbs in sentences	Review model verbs	Lecture	Discussion and exam
May 1	1	Spelling numbers	Teaching numbers	Lecture	Discussion and exam
May 2		Learning about different colors	Teaching colors	Lecture	Discussion and exam
May 3		Learning different types of questions	Wh word questions and yes/no questions	Lecture	Discussion and exam
May 4					
June 1	1	Revision	Revision	Lecture	Discussion and exam
June 2	1	Revision	Revision	Lecture	Discussion and exam
June 3	-------		Final Exams	----------	----------

11. Course Evaluation

First Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Second Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Total for the 1st and 2nd Courses: 50
Final Exam: 50
Final Grade: 100

12. Learning and Teaching Sources

Required textbooks (curricular books, if any)	The Ministry's prescribed book for all the stages
Main references (sources)	----------
Recommended books and references (scientific journal, reports	
Electronic References, Websites	https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en.

Course Description Form

1. Course Name
Human Rights
2. Course Code
3. Semester/Year
2023-2024
4. Date of preparation of this description
19/1/2024
5. Available Attendance Forms
Weekly
6. Number of credit hours (total) / number of units (total)
30 hours
7. Course administrator's name (if more than one name is mentioned)
Name: Email:
8. Course Objectives

Course Objectives	1- Enabling the student to know the development of human rights 2- Knowledge of the articles of the Universal Declaration issued by the United Nations Assembly 1948 3- Definition of democracy and its types 4- Promoting awareness of the culture of elections

9. Teaching and learning strategies

Strategy	

10. Course Structure

The week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**1**	**1-2-3**	**Human**	**Explanation,**	**Exam**

			rights in ancient civilizations	**presentation of the model and lecture**	
2	**1**	=	**Universal Declaration of Human Rights**	=	=
3	**1**	=	**Human Rights Resources**	=	=
4	**1**	=	**Human rights guarantees**	=	=

11. Course Evaluation	
Grade distribution out of 100 1- 20 marks of the first month exam 2- 20 degrees on the second month 3- 10 marks on preparation and participation in the classroom	
12. Learning and Teaching Resources	
Required textbooks (methodology, if any)	Prof. Maher Saleh Allawi
Key references (sources)	
Recommended books and references (scientific journals, reports...)	

Course Description Form

1. Course Name:
Foundations of Education
2. Course Code:
3. Semester / Year:
2023-2024
4. Description Preparation Date:
1/11/2023
5. Available Attendance Forms:
Attendance Study
6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hours weekly :(30 weeks- 60 Hours per year) / 4 Units
7. Course administrator's name (mention all, if more than one name)
Name: **Asst. Lec. Daham Samer Maher Mustafa** Email: **DahamS.Maher** @tu.edu.iq
8. Course Objectives

Course Objectives	Increase the student's understanding of the educational and social reality throughout the ages and realize the educational process in its most essential necessities and understand educational theories on various peoples, ancient and modern General Objectives Interpret the educational process from a historical and philosophical point of view0 and shed light on upbringing and education, and clarify the importance of the role of social educational upbringing institutions, and help students train and feel the importance of the educational process, and it is also a science that describes and explains the impact of educational systems on historical reality, ancient and modern, and the impact of educational processes and relationships on the individual's personality and upbringing. Among its most important objectives are to determine the educational reality revealed by philosophical schools in education, to determine the objectives of community education and to apply educational concepts, to study the relationships between the educational system

	based on social interaction and other educational systems, and to study the individual human being when he enters with another human being in educational institutions and in the relationships and dealings of humanity and his interaction with the systems approved by society.

9. Teaching and Learning Strategies

Strategy	• Lecture method. • Skill in creating mini research projects. • Giving examples and modern applications to enhance understanding.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	**The Meaning and Objectives of Education and its Necessity**	Educational Psychology and its Development	Presentation lecture and discussion	Asking and answering questions from the student
2-4	6	**Historical Basis of Education**	Educational aims	Presentation lecture and discussion	Asking and answering questions from the student
5		**Ancient Education Historical Basis of Education**		Presentation lecture and discussion	Asking and answering questions from the student
6	2	**Chinese Education Historical Basis of Education**	Memory its theories and its role in teaching	Presentation lecture and discussion	Asking and answering questions from the student

7	2	**Greek Education Historical Basis of Education**	Memory its theories and its role in teaching	Presentation lecture and discussion	Asking and answering questions from the student
8-9	4	**Medieval Education**	forgetfulness	Presentation lecture and discussion	Asking and answering questions from the student
10-11	4	**Arab Education Before Islam and After Islam**	Transfer of learning effect	Presentation lecture and discussion	Asking and answering questions from the student
12	-	**Modern Education**	Second exam of the first semester	-	-
13-15	6	**The Relationship between Education and Society The Social Basis of Education**	Motivation	Presentation lecture and discussion	Asking and answering questions from the student
16-18	6	**The Relationship between the Individual and the Environment The Social Basis of Education**	Concepts and their relationship to creative and scientific thinking	Presentation lecture and discussion	Asking and answering questions from the student
19-20	4	**Moral Education The Social Basis of Education**	Feedback	Presentation lecture and discussion	Asking and answering questions from the student

21	2	**Family Education, The Social Basis of Education**	First exam of the second semester	-	-
22-24	6	**National Education,**	Education Theories	Presentation lecture and discussion	Asking and answering questions from the student
25-26	4	**Health Educatio**	Factors affecting learning	Presentation lecture and discussion	Asking and answering questions from the student
27-28	4	**Education and its Impact on Economic Development Economic Basis of Education**	Individual differences and their impact on learning	Presentation lecture and discussion	Asking and answering questions from the student
29	2	**Exploitation of Natural Resources Economic Basis of Education**	Second exam of the second semester	-	-
30-31	4	**Education and Research Methodology**	Skills and Habits and How to Acquire Them	Presentation lecture and discussion	Asking and answering questions from the student
32	2	**Education in the Islamic Perspective Comprehensive School Methodological Education Educational**	Types of learning	Presentation lecture and discussion	Asking and answering questions from the student

		Renewal in Iraq **Schools of Distinguished Acceleration Educational Renewal in Iraq**			

11.Course Evaluation
Daily exams, assignments and reports: 10 points, monthly exams: 40 points, final exam: 50 points
12.Learning and Teaching Resources
Fundamentals of Educational Psychology
13.Main references (sources)
- Educational Psychology - Cognitive Psychology - Thinking Without Limits.
The most important books and sources on educational psychology
● Reliable websites. ● Websites of libraries in some Iraqi and Arab universities.

Course Description Form

1. Course Name:
Educational Psychology
2. Course Code:
3. Semester / Year:
2023-2024
4. Description Preparation Date:
1/11/2023
5. Available Attendance Forms:
Attendance Study
6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hours weekly :(30 weeks- 60 Hours per year) / 4 Units
7. Course administrator's name (mention all, if more than one name)
Name: Mays Amer Hashim Email: mays.a.hashim@tu.edu.iq
8. Course Objectives

Course Objectives	● The student will learn about the concept of educational psychology and its areas of interest and study ● The student will understand the meaning of memory, its nature and its role in teaching. ● The student will learn about the importance of motivation in the field of educational psychology. ● The student will learn about the meaning of transfer of learning effect and its educational applications. ● The students will learn about the concept of classroom learning and its importance in education ● The students will learn about the difference between learning, education and teaching ● The students will learn about the factors affecting classroom learning ● The students will learn about the different learning methods (auditory, visual, kinetic) ● The students will learn about the appropriate teaching strategies to take into account individual differences ● The students will learn about effective classroom management strategies.

9. Teaching and Learning Strategies	
Strategy	• Lecture method. • Skill in creating mini research projects. • Giving examples and modern applications to enhance understanding.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the meaning of educational psychology	Educational Psychology and its Development	Presentation lecture and discussion	Asking and answering questions from the student
2-4	6	The student should be able to formulate behavioral objectives and formulate a question that achieves the objective.	Educational aims	Presentation lecture and discussion	Asking and answering questions from the student
5		-	First exam of the first semester	Presentation lecture and discussion	Asking and answering questions from the student
6	2	Learn about memory and its theories	Memory its theories and its role in teaching	Presentation lecture and discussion	Asking and answering questions from the student
7	2	Learn about memory and its theories	Memory its theories and its role in teaching	Presentation lecture and discussion	Asking and answering questions from the student

8-9	4	Learn about forgetting and its theories	forgetfulness	Presentation lecture and discussion	Asking and answering questions from the student
10-11	4	Recognizing the transfer of learning	Transfer of learning effect	Presentation lecture and discussion	Asking and answering questions from the student
12	-	-	Second exam of the first semester	-	-
13-15	6	Identify the role of motivation in the learning process	Motivation	Presentation lecture and discussion	Asking and answering questions from the student
16-18	6	Learn the meaning of the concept of creative and scientific thinking	Concepts and their relationship to creative and scientific thinking	Presentation lecture and discussion	Asking and answering questions from the student
19-20	4	Learn the meaning of feedback	Feedback	Presentation lecture and discussion	Asking and answering questions from the student
21	2	-	First exam of the second semester	-	-

22-24	6	Learn about educational theories	Education Theories	Presentation lecture and discussion	Asking and answering questions from the student
25-26	4	Identifying factors affecting learning	Factors affecting learning	Presentation lecture and discussion	Asking and answering questions from the student
27-28	4	Recognizing individual differences	Individual differences and their impact on learning	Presentation lecture and discussion	Asking and answering questions from the student
29	2	-	Second exam of the second semester	-	-
30-31	4	Identify skills and habits	Skills and Habits and How to Acquire Them	Presentation lecture and discussion	Asking and answering questions from the student
32	2	Understand the meaning of learning types	Types of learning	Presentation lecture and discussion	Asking and answering questions from the student

11.Course Evaluation

Daily exams, assignments and reports: 10 points, monthly exams: 40 points, final exam: 50 points

12.Learning and Teaching Resources

Fundamentals of Educational Psychology

13.Main references (sources)

- Educational Psychology
- Cognitive Psychology
- Thinking Without Limits.

The most important books and sources on educational psychology

- Reliable websites.
- Websites of libraries in some Iraqi and Arab universities.

Course Description Form

1. Course name
Computer Principles - First Stage
2. Course code
Bachelor's degree
3. Semester/Year
2023/2024
4. Date of preparation of this description
3/9/2023
5. Available Forms of Attendance
Daily
6. Number of class hours (total) / Number of units (total)
96 hours
7. Name of the course administrator (if more than one)
Name: M. Anas Ibrahim Mohamed **E-mail: anas.ibrahim@tu.edu.iq**
urse objectives

• **-The student acquires knowledge of computer principles and office applications.** • **-The student acquires sufficient knowledge of computer fundamentals .** • **-The student acquires sufficient knowledge about computer components.** • **-The student acquires sufficient knowledge about software licenses and computer security .** • **-Acquire sufficient knowledge about the classification of operating systems .**	se Objectives

• **-Gain sufficient knowledge about operating systems, including Windows 7, 8, and 10.** • **-Gain sufficient knowledge about the components of the desktop, the Start Menu, and the taskbar.** • **-Gain sufficient knowledge about Folders & Files** • **-Gain sufficient knowledge of primary and secondary Icons.** • **-Gain sufficient knowledge of the Control Panel .**	

aching and Learning Strategies

• -Manage the lecture in an applied manner related to the reality of daily life to attract the student to the subject of the lesson without moving away from the core of the subject to make the material flexible and able to be understood and analyzed. • -Assign the student some activities and group assignments. • -Allocate a percentage of the grade for daily assignments and tests.	egy

Course structure

luation method	earning method	Module name or topic	Desired Learning Outcomes	الساعا	Week
General Questions & Discussion	Lecture	Computer Lifecycle, Operating Systems	Recognize computer basics	**3**	first
General Questions & Discussion	Lecture	First, second, third and fourth generation computers and Windows 7	Recognize the stages of computer generations	٣	second

General Questions & Discussion	Lecture	What is an electronic computer and what is data and information and the Windows 7 operating system	Recognize the electronic computer	٣	third
General Questions & Discussion	Lecture	Features in terms of characteristics as well as uses	Recognize the features of the computer and its areas of use as well as the components of the desktop	٣	fourth
General Questions & Discussion	Lecture	Hardware, software and desktop components	Recognize computer components	٣	Fifth
General Questions & Discussion	Lecture	Purpose of use by size and operating system	Recognize the types of computers as well as the components of the desktop	٣	sixth
General Questions & Discussion	Lecture	Desktop, minicomputer, microcomputer, midrange and supercomputer	Recognize the classification of computers by size and performance, as well as recognizing the taskbar	٣	seventh
General Questions & Discussion	Lecture	Desktop, laptop and handheld computer	Recognize the types of microcomputers as well as the taskbar	٣	eighth
General Questions & Discussion	Lecture	Analog, hybrid and digital computers	Recognize the classification of computers by data type as well as how to search for files and programs	٣	ninth
General Questions & Discussion	Lecture	IOS, Windows and Android operating	Recognize the classification of computers	٣	tenth

		systems	based on the operating system		
General Questions & Discussion	Lecture	Monthly exam	Student assessment	۳	eleventh
General Questions & Discussion	Lecture	Keyboard and Mouse	Recognize the physical components of a computer as well as the arrangement of open windows	۳	XII
General Questions & Discussion	Lecture	Trackball and touchpad as well as touch-sensitive display	Recognize the physical components of a computer as well as recognize how to turn on and restart a computer	۳	thirteenth
General Questions & Discussion	Lecture	Scanner, digital camera and stylus	Recognize the physical components of a computer as well as recognizing the operation of the taskbar	۳	XIV
General Questions & Discussion	Lecture	Joystick, microphone, and optical marker reader	Recognize physical computer components as well as recognize uninstalling the taskbar	۳	XV
General Questions & Discussion	Lecture	Monitor, speakers, and video projector	Recognize physical computer components - output devices as well as recognize resizing icons	۳	XVI
General Questions & Discussion	Lecture	Printers and their types	Recognize physical	۳	XVII

			computer components - output devices as well as recognizing the creation of folders and files		
General Questions & Discussion	Lecture	CPU, arithmetic, logic and control unit	Recognize the computer box	۳	XVIII
General Questions & Discussion	Lecture	Power switch, reset, ports, temporary and permanent memory, slots, hard disk, and video cards	Recognize the internal and external parts of a system unit as well as file naming.	۳	nineteenth
General Questions & Discussion	Lecture	Monthly exam	Student assessment	۳	XX
General Questions & Discussion	Lecture	RAM, ROM, HARD DISK, FLASH MEMORY, CD, DVD	Recognize primary and secondary memory	۳	twenty-first
General Questions & Discussion	Lecture	Converting memory units to kilobytes, megabytes and megabytes	Recognize bits and bytes	3	Twenty-second
General Questions & Discussion	Lecture	Basic input and output system	Recognize bytes as well as file deletion	۳	Twenty-third
General Questions & Discussion	Lecture	Operating systems and application programs	Recognize a software entity	۳	Twenty-fourth
General Questions & Discussion	Lecture	Machine language and intermediate and high level languages	Recognize programming languages to permanently delete files	۳	Twenty-fifth
General Questions & Discussion	Lecture	Binary, decimal, octal and hexadecimal systems	Recognize setup systems	۳	Twenty-sixth
General Questions	Lecture	Introduction and	Recognize	۳	Twenty-seventh

& Discussion		ethics of the electronic world and its abuses	computer security and software licenses		
General Questions & Discussion	Lecture	Computer security and software licenses	Recognize computer security and software licenses	٣	Twenty-eighth
General Questions & Discussion	Lecture	User and collective licenses and the meaning of intellectual property	Recognize the types of slack	٣	twenty-ninth
General Questions & Discussion	Lecture	Definition, types and sources of hacking	Recognize cyber hacking and its types	٣	thirtieth
General Questions & Discussion	Lecture	Explain the types of viruses and malicious programs and steps to prevent viruses	Recognize computer viruses and malicious programs and the resulting damage and how to prevent them.	٣	thirty-first
-	-	Monthly quiz	Student assessment	٣	thirty-second

Course evaluation	
exams grade: 10, Assignments and reports: 10, Monthly exams grade: 30	
Learning and Teaching Resources	
Computer Basics and Office Applications First part Prof. Dr. Ziad Mohammed	uired textbooks (methodology, if any)

Abboud, Prof. Dr. Ghassan Hamid Abdulmajeed, Prof. Dr. Amir Hussein and M. Bilal Kamal 14	
most important books and resources on the basics of computers in the Central Library.	mmended supporting books and references (scientific journals, reports...)
• -Reputable websites. • -Library websites of some international universities.	tronic references, websites

Course Description Form

12.Course name
University Physics-First stage
13.Course code
Bachelor's degree
14.Semester/Year
2023-2024
15. Date this description
1\11\2023
16.Available forms of attendance
Daily
17.Number of study hours (total) / Number of units (total)
64 hours
18.Name of the course administrator (if more than one name is mentioned)
ne: Professor Amir Shaker Mahmood **ail**: amiroshaker@yahoo.com
19.Course objectives

Subject objectives:	• The student acquires about topics in university physics. • The student acquires sufficient knowledge about directional physical quantities. • The student acquires sufficient knowledge about numerical physical quantities.

	• The student acquires sufficient knowledge about numerical multiplication and directional multiplication. ıe student acquires sufficient knowledge about motion and its types.
20.Teaching and learning strategies	
The strategy:	• Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and can be understood and analyzed. • Assigning the student some group activities and assignments. locating a percentage of the grade for daily assignments
10 Course Structure	

Weeks	Hours	Required Learning	Outcomes Unit or Topic	Learning Method	Evaluation Method
First	**2**	**Identify symbols and units of arithmetic**	**Definition of units and symbols and how to use them**	**lecture**	**General questions, discussion, explanations and solving examples**
Second	**2**	**Identify directional physical quantities**	**Definition of physical quantities and how to analyze them**	**lecture**	**General questions, discussion, explanations and solving examples**
Third	**2**	**Identify numerical physical quantities**	**Explain how numerical physical**	**The lecture**	**General questions, discussion,**

			quantities		explanations and solving examples
Fourth	2	Identify directional physical quantities	Explain how directional physical quantities	The lecture	General questions, discussion, explanations and solving examples
Fifth	2	Solve a set of examples and questions	How to solve a set of examples and questions	The lecture	General questions, discussion, explanations and solving examples
Sixth	2	Identify numerical and directional multiplication	How to compare numerical and directional multiplication	The lecture	General questions, discussion, explanations and solving examples
Seventh	2	Identify the concept of motion	Types of motion in physics and its applications	The lecture	General questions, discussion, explanations and solving examples
Eight	2	Identify types of differential equations and methods of solving them	Finding the integration factor for the equation Linear differential	The lecture	General questions, discussion, explanations and solving examples
Ninth	2	Identify the types of differential equations and methods of solving them	Bernoulli's equation as a special case of the linear differential equation	The lecture	General questions, discussion, explanations and solving examples
Tenth	2	Identify motion in a straight	line Identify motion and explain laws and issues	The lecture	General questions, discussion, explanations and

					solving examples
Eleventh	2	Student evaluation	Monthly exam	The lecture	General questions, discussion, explanations and solving examples
Twelfth	2	Identify uniform circular motion	Explain the concept of motion and its use	-	-
Thirteenth	2	Identify free fall	Identify freely falling bodies	The lecture	General questions, discussion, explanations and solving examples
Fourteenth	2	Identify acceleration and ground acceleration	Explain acceleration and ground acceleration	The lecture	-
Fifteenth	2	Identify velocity and instantaneous velocity	Identify the concept of velocity and instantaneous velocity	The lecture	General questions, discussion, explanations and solving examples
Sixteenth	2	Examples and questions	Solve examples and questions	The lecture	General questions, discussion, explanations and solving examples
Seventeenth	5	Projectile motions	Explaining the concept of the vertical vehicle	The lecture	General questions, discussion, explanations and solving examples
Eighteenth	2	Projectile analysis	How to analyze the initial	The lecture	General questions,

			velocity and final velocity		discussion, explanations and solving examples
Nineteenth	2	Projectiles Solving	some examples and questions	The lecture	General questions, discussion, explanations and solving examples
Twenty	2	Circular and non-circular motion	Understanding the concept of circular and non-circular motion	The lecture	General questions, discussion, explanations and solving examples
Twenty-one	2	Angle displacement	Understanding the concept of angle displacement and explaining the laws	The lecture	General questions, discussion, explanations and solving examples
Twenty-two	2	Newton's laws of motion	Explaining Newton's laws of motion	The lecture	General questions, discussion, explanations and solving examples
Twenty-three	2	Student evaluation	Monthly exam	The lecture	-
Twenty-four	2	Resultant forces	Explaining the resultant forces and their groups	The lecture	General questions, discussion, explanations and solving examples
Twenty-five	2	Center of gravity	Determining the center of gravity of shapes	The lecture	General questions, discussion, explanations and solving examples
Twenty-six	2	Student evaluation	Monthly exam	The lecture	General

					questions, discussion, explanations and solving examples
Twenty-seven	2	Center of gravity	Explain examples and questions	The lecture	General questions, discussion, explanations and solving examples
Twenty-eight	2	Power and energy	Explain examples and questions	The lecture	General questions, discussion, explanations and solving examples
Twenty-nine	2	Impulse and momentum	Explain the concept of impulse and momentum	The lecture	General questions, discussion, explanations and solving examples
Thirty	2	Impulse and momentum and the difference between them	Explain the concept of impulse and momentum and the difference between them	The lecture	General questions, discussion, explanations and solving examples
Thirty-one	2	Weight and its types	Explain the concept of weight and its types	The lecture	General questions, discussion, explanations and solving examples
Thirty-two	2	Student evaluation	Monthly exam	-	-

21. Course Evaluation.

Daily exams score: 10, **Homework and reports score: 10,** **Monthly exams score: 30;** **Final exam score: 50**

22. Learning and teaching references	
quired textbooks	University Physics Volume 1 - Open Textbook Library
Main References	• Reliable websites. • Websites of libraries in some international universities.
Recommended supporting books and references (scientific journals, reports...)	most important books and references on Physics available in the Central Library.
Electronic references, website.	3- Reliable websites. 4- Libraries websites in some international universities

Course Description Form

1. Course Name:	
First stage: New Headway Beginner	
W Course Code:	
Bachelor's degree	
3. Semester / Year:	
2023-2024	
4. Description Preparation Date:	
29/1/2024	
5. Available Attendance Forms:	
Class lectures	
6. Number of Credit Hours (Total) / Number of Units (Total):	
60 hours / 14 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Lect. Israa Bahram Azeez Assist. Lect. Noor Arkan Galeb Email: Israa.bahram@88tu.edu.iq Noor.arkan89@tu.edu.iq	
8. Course Objectives	
Learning	7. Enabling the students to: ❖ Read and write in English ❖ Follow the basic rules of the English language. ❖ Understand the ways of life in English-speaking societies, especially the British and American, and some of the differences between them. ❖ Communicate linguistically. ❖ Understand the language of films and the internet. 8. Teaching the students English language in smooth and simple manner. 9. Urging the students to solve the exercises and apply the rules. 10. Encouraging them to continue learning English language lessons by following programs in English and listening to conversation. 11. Developing the Students' skills in expressing himself and his ability to speak orally.

	12. Developing the students' conversational skills and reading skills through the exercises in the student book

9. Teaching and Learning Strategies

Strategy	• The standard method (giving lectures). • The text method. • Brainstorming method. • Some modern strategies.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
November 1 Unit One & Two	1	Learning greetings and self-introduction	Introduction use auxiliary /am/is/are In speaking and reading. Unit two: use the subjects /he/she/they/we /I/you In practice grammar.	Lecture	Discussion and exam
November 2 Unit Three	1	Learning to use pronouns in the correct way	using negative and positive on short answers and Using possessives in adj. and plural nouns	Lecture	Discussion and exam
November 3 Unit Four and Five	1	Asking and answering personal information	Teaching present simple And Teaching past simple	Lecture	Discussion and exam
December 1 Unit Seven	1	Learning to talk about favorites	Teaching present		Discussion and

And eight		- Learning about Furniture	continuous and Teaching past continuous	Lecture	exam
December 2 Unit Nine	1	Learn to talk about the past	Teaching past simple – irregular verbs	Lecture	Discussion and exam
December 3 Unit Ten	1	Learning about sport and leisure	Teaching past simple in using questions and negatives	Lecture	Discussion and exam
December 4 Unit Eleven	1	Talking about everyday problem	Using can in positive and negatives	Lecture	Discussion and exam
January 1 Unit Thirteen	1	Talking about everyday problem	Teaching model verbs	Lecture	Discussion and exam
January 2 Unit Fourteen	1	Talking about food	Teaching adverbs	Lecture	Discussion and exam
January 3	1	Asking questions	using would like in questions	Lecture	Discussion and exam
January 4	1	Learning about countable and uncountable words	Teaching some/any and the differences	Lecture	Discussion and exam
February 1	1	talking about preferences	Teaching like and would like	Lecture	Discussion and exam
February 2	1	Learn to talk about daily activity	Teaching present simple	Lecture	Discussion and exam
February 3	1	Learn about the colors	Teaching present continuous	Lecture	Discussion and exam
February 4	1	Asking and answering questions	Teaching Yes/No questions	Lecture	Oral Test
March 1	1	Talking about the future	Teaching future plans	Lecture	Oral Test
March 2	1	Learning about nouns	Teaching countable and uncountable	Lecture	Discussion and exam
March 3	1	Learning when to use (the)	Teaching the determiner	Lecture	Discussion and

			(the)		exam
April 1	1	Learning when to use (the)	Teach the determiners a/an	Lecture	Discussion and exam
April 2	1	Using possessive to talk about belongingness	Using possessives in adj. and plural nouns	Lecture	Discussion and exam
April 3	1	Using prepositions in the right way	Teaching prepositions	Lecture	Discussion and exam
April 4	1	Using model verbs in sentences	Review model verbs	Lecture	Discussion and exam
May 1	1	Spelling numbers	Teaching numbers	Lecture	Discussion and exam
May 2		Learning about different colors	Teaching colors	Lecture	Discussion and exam
May 3		Learning different types of questions	Wh word questions and yes/no questions	Lecture	Discussion and exam
May 4					
June 1	1	Revision	Revision	Lecture	Discussion and exam
June 2	1	Revision	Revision	Lecture	Discussion and exam
June 3	-------		Final Exams	----------	----------

11. Course Evaluation

First Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Second Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Total for the 1st and 2nd Courses: 50
Final Exam: 50
Final Grade: 100

12. Learning and Teaching Sources

Required textbooks (curricular books, if any)	The Ministry's prescribed book for all the stages
Main references (sources)	----------
Recommended books and references (scientific journal, reports	
Electronic References, Websites	https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en.

Course Description Form

1. Course Name: Computer II
2. Course Code: Bachelor's
3. Semester / Year:
2023-2024
4. Description Preparation Date: 3/09/2023
5. Available Attendance Forms: Daily
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours
7. Course administrator's name (mention all, if more than one name)
Name: Ali Mahmood Khalaf Email: ali.mahmood@tu.edu.iq Name : Ahmad Mahdi Salih Email: ahmad.ballu@tu.edu.iq
8. Course Objectives

Course Objectives	It aims to teach the student how to build an algorithm and a flowchart and enable the student to learn the basic principles of the MATLAB programming language.
9. Teaching and Learning Strategies	
Strategy	• Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the material is flexible and capable of being understood and analyzed. • Allocating a percentage of the grade for daily assignments and tests.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	٢	Cognitive	**MATLAB Programming Language Introduction**	Lecture	General questions and discussion
2.	٢	Cognitive	**Data Types in MATLAB**	Lecture	General questions and discussion
3.	٢	Cognitive	**Arrays in MATLAB**	Lecture	General questions and discussion
4.	٢	Cognitive	**Symbolic Arrays in MATLAB**	Lecture	General questions and discussion
5.	٢	Cognitive	**Types of Variables in MATLAB**	Lecture	General questions and discussion
6.	٢	Cognitive	**Mathematical Operations in MATLAB**	Lecture	General questions and discussion
7.	٢	Cognitive	**Exponential and Homeostatic Functions in MATLAB**	Lecture	General questions and discussion
8.	٢	Cognitive	**Student Evaluation (Monthly Exam)**	Lecture	General questions and discussion
9.	٢	Cognitive	**Rounding and Remainder Functions in MATLAB**	Lecture	General questions and discussion
10.	٢	Cognitive	**Complex Numbers**	Lecture	General questions and discussion
11.	٢	Cognitive	**Input and Output Commands in MATLAB**	-	-

12.	٢	Cognitive	**Examples of Input and Output Commands**	Lecture	General questions and discussion
13.	٢	Cognitive	**M Text Files in MATLAB**	Lecture	General questions and discussion
14.	٢	Cognitive	**Conditional and Control Statements**	Lecture	General questions and discussion
15.	٢	Cognitive	**Examples of Conditional and Control Statements**	Lecture	General questions and discussion
16.	٢	Cognitive	**Student Evaluation (Monthly Exam)**	Lecture	General questions and discussion
17.	٢	Cognitive	**Loop Statements**	Lecture	General questions and discussion
18.	٢	Cognitive	**Types of Loop Statements**	Lecture	General questions and discussion
19.	٢	Cognitive	**Some Examples of Loop Statements**	Lecture	General questions and discussion
20.	٢	Cognitive	**Jumping Statements**	-	-
21.	٢	Cognitive	**Try…Catch Boxes**	Lecture	General questions and discussion
22.	٢	Cognitive	**Functions in MATLAB**	Lecture	General questions and discussion
23.	٢	Cognitive	**Some Examples of Functions**	Lecture	General questions and discussion

24.	٢	Cognitive	**Student Evaluation (Monthly Exam)**	Lecture	General questions and discussion
25.	٢	Cognitive	**Arrays and Vectors**	-	-
26.	٢	Cognitive	**Some Examples of Arrays and Vectors**	Lecture	General questions and discussion
27.	٢	Cognitive	**Mathematical Operations on Matrices**	Lecture	General questions and discussion
28.	٢	Cognitive	**Mathematical Operations on Matrices**	Lecture	General questions and discussion
29.	٢	Cognitive	**Examples of Mathematical Operations on Matrices**	Lecture	General questions and discussion
30.	٢	Cognitive	**Student Evaluation (Monthly Exam)**	-	-

11. Course Evaluation	
Daily exams score: 10 marks , homework and reports score: 10, monthly exams score: 30 marks, final exam score: 50 marks	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Reference:

https://uomustansiriyah.edu.iq/media/lectures/6/6_2018_12_06!12_35_05_PM.pdf

https://drive.uqu.edu.sa/_/kahindi/files/matlab.pdf

Course Description Form

1. Course Name:	
Ordinary Differential Equations	
2. Course Code:	
3. Semester / Year:	
2023-2024	
4. Description Preparation Date:	
1/10/2023	
5. Available Attendance Forms:	
Attendance Study	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 Hours weekly :(30 weeks-120 Hours per year) / 6 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Muayyad Mahmood Khalil Email: medomath80@tu.edu.iq	
8. Course Objectives	
Course Objectives	-Cognitive objectives: Which through it , the student is able to : 1. Understand the course topics and related mathematical problems. 2. Remember the information and laws given in the course 3. Analyze the question text and organize the information to utilize it in solving and obtaining correct results. 4. Forming ideas about the course material and how to devise appropriate laws to solve it. - Skill objectives: Which through it , the student is able to: 1. Apply what he has learned in solving mathematical problems. 2. Construct problems related to the course topics and then arrive at correct solutions. 3. Use the appropriate laws to solve each problem. 4. Be able to link between topics that can be connected within the course content. -Affective Objectives: Wherein the students possess: 1. An interest in the instructor's explanation of the course material. 2. Sufficient conviction of the importance of the material he receives. 3. Readiness to cooperate with others in solving mathematical

	problems. 4. The ability of interact and discuss with his peers or professor to solve a specific issue.

9. Teaching and Learning Strategies

Strategy	The following strategies are followed: 1. Teaching using the discussion method between the student and the instructor to support viewpoints. 2. Learning through brainstorming among students. 3. Collaborative learning by assigning students to prepare reports on course topics. 4. Teaching using the one-minute paper technique, like copetitions to foster enthusiasm among students. 5. Learning by making the student as a teacher to enhance his self-confidence. 6. Learning through daily and monthly attendance examinations. 7. Learning using problem-solving strategy.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	8	Distinguishing the degree and order of the differential equations and its types.	Important basics of ordinary differential equations	Presentation lecture and discussion	Attendance exams (daily and monthly)
3	4	Learn the types of solutions to differential equations and how to find them.	Solutions of the differential equation: the general solution, the particular solution, the singular solution	Presentation lecture and discussion	Attendance exams (daily and monthly)
4	4	Learn how to derive the differential equation from the general solution	Composition the differential equation from the general solution	Presentation lecture and discussion	Attendance exams (daily and monthly)

5-12	32	The student learned how to solve the first order and first order differential equations with their types and how to distinguish between their cases	The Ordinary Differential Equation of the first order and first degree: 1) Separable equation. 2) Homogenous equation. 3) Differential equation with linear coefficients. 4) Exact differential equation. 5) Integral factors. 6) Bernoulli's equation. 7) Ricatt's Eq. 8) The diff. eq. of the form $f'(y)\frac{dy}{dx} + P(x)f(y) = Q(x)$. 9) Equation that is solved using a suitable substitution.	Presentation lecture and discussion	Attendance exams (daily and monthly)
13	-	-	Monthly exam	Presentation lecture and discussion	Attendance exams (daily and monthly)
14-16	12	Applies the differential equations to solve real-life problems.	Applications of first order and first-degree differential equations 1- Geometrical applications (Orthogonal Trajectories 2- Growth and Decay of population 3- Cooling problem	Presentation lecture and discussion	Attendance exams (daily and monthly)

17-19	12	The student will learn to solve a differential equation of the first order and higher degrees with its three types and special cases, such as the Clairaut equation and the Lagrange equation.	Solution of The Differential Equations of The First Order and Higher Degree 1: equation solvable for p 2: equation solvable for y 3: equation solvable for x	Presentation lecture and discussion	Attendance exams (daily and monthly)
20	-	-	Monthly exam	Presentation lecture and discussion	Attendance exams (daily and monthly)
20-25	24	Learn to use the D operator to solve higher order equations with constant coefficients	Solving first-order and higher order ordinary differential equations using the operator D.	Presentation lecture and discussion	Attendance exams (daily and monthly)
26	4	Learn how to solve a differential equation by reducing its order	Reducing the order of a differential equation (for the second order differential equation)	Presentation lecture and discussion	Attendance exams (daily and monthly)
27	-	-	Monthly exam	Presentation lecture and discussion	Attendance exams (daily and monthly)

28-31	16	Knowledge of the laplace transform, its properties, and how to use it in solving differential equations.	The Laplace transform: Definition of Laplace transform, The inverse of Laplace transform, Using Laplace transform to solve the linear ordinary differential equations with constant coefficients	Presentation lecture and discussion	Attendance exams (daily and monthly)
32	-	-	Monthly exam	Presentation lecture and discussion	Attendance exams (daily and monthly)

11.Course Evaluation

A- The annual pursuit mark is (50) marks, divided as follows:
1- The monthly written exam is (40) marks
2- The daily written exams are (5) marks
3- Daily preparation, oral exams, and reports are (5) marks
B- The final exam score is (50) marks
Total (100) marks

12.Learning and Teaching Resources

Methods for solving ordinary differential equations, Dr. Khalid Al-Aamarrai and Dr. Yahya Saeed.

13.Main references (sources)

Advanced Differential Equations, M.D. Raisinghania, 2011.
A First Course in Differential Equations with Modeling Application, Dennis G. Zill, Tenth edition.

Electronic References, Websites
https://tutorial.math.lamar.edu/classes/de/de.aspx

Course Description Form

23.Course name	
Advance Calculus-Second stage	
24. Course code	
Bachelor's degree	
25. Semester/Year	
2023-2024	
26. Date this description	
15\9\2023	
27. Available forms of attendance	
Daily	
28. Number of study hours (total) / Number of units (total)	
150 hours	
29.Name of the course administrator (if more than one name is mentioned)	
anas_abass@tu.edu.iq	
30.Course objectives	
Subject objectives:	culus is one of the main topics in mathematics and is based on the subject of differential and integral. Evaluate the limit of a function, including one-sided and two-sided, using numerical and algebraic techniques and the properties of limits with

	multi-variable. □ Determine whether a function is sequence and series convergent or not via some tests. □ Determine whether functions are continuous or discontinuous at a point about two variable or most. □ Calculate and sketch the spectial polar coordenate using the formal definition of the parameteric equation. □ Calculate the partial derivative of an algebraic function using the formal definition of the derivative. □ Explain the concept of partial derivative as an "instantaneous rate of change" find high partial order derivatives of functions using the constant, power, sum, difference, product, quotient, and chain rules, and using implicit and total differentiation. □ Find the vector valued derivative of algebraic, exponential, and logarithmic functions. □ Determine maximal and minimal in lagrange multipler.

	□ Apply the concept of parial derivative to solve applied problems involving marginal cost, profit and revenue, and growth and decay problems. □ Find definite and indefinite seconed integrals by using general integral formulas. □ Use integration techniques to find the volume. □ Find definite and indefinite thired integrals by using general integral formulas. ration in poler and cylender coordenates with applications
31. Teaching and learning strategies	
The strategy:	Students completing this course will be able to find a limit of a function graphically. □ Students completing this course will be able to compute the partial derivative of an algebraic function. □ Students completing this course will be able to find a (linear) Marginal Cost function and interpret it. □ Students completing this course will be able to find the volume by multi-integral.

Course Structure

Weeks	Hours	Required Learning	Outcomes Unit or Topic	Learning Method	Evaluation Method
First	**5**	Infinite sequences, definitions and examples	*Infinite sequences and series*	**The lecture**	**General questions, discussion, explanations and solving examples**
Second	**5**	Bounded Monotonic sequences	*Infinite sequences and series*	**The lecture**	**General questions, discussion, explanations and solving examples**
Third	**5**	Geometric series, telescoping series, Combining series, Convergence and divergence tests.	*Infinite sequences and series*	**The lecture**	**General questions, discussion, explanations and solving examples**
Fourth	**5**	Alternating series, absolute and conditional convergence	*Infinite sequences and series*	**The lecture**	**General questions, discussion, explanations and solving examples**
Fifth	**5**	**Solutions of the exercises**	**Solutions of the applied exercises in this chapter**	**The lecture**	**General questions, discussion, explanations and solving examples**
Sixth	**5**	The convergence	Power series	**The lecture**	**General questions,**

		for power series			**discussion, explanations and solving examples**
Seventh	**5**	Taylor and Maclaurin series	Power series	**The lecture**	**General questions, discussion, explanations and solving examples**
Eight	**5**	**Solutions of exercises**	**Solutions to various and applied chapter exercises**	**The lecture**	**General questions, discussion, explanations and solving examples**
Ninth	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**General questions, discussion, explanations and solving examples**
Tenth	**5**	**Cycloids Calculus with Parametric curves Length of a parametrically defined curve**	Parametric equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Eleventh	**5**	**Arc Length differential Area of Surfaces of revolution**	Parametric equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Twelfth	**5**	Graphing in polar coordinates	Polar coordinates	-	-
Thirteenth	**5**	**Areas and length in polar coordinates Arc length of a polar coordinates**	Polar coordinates	**The lecture**	**General questions, discussion, explanations and solving examples**

Fourteenth	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**-**
Fifteenth	**5**	**Introduction of the vector space**	*Vector-valued function Spaces*	**The lecture**	**General questions, discussion, explanations and solving examples**
Sixteenth	**5**	Distance formula in space	*Vector-valued function Spaces*	**The lecture**	**General questions, discussion, explanations and solving examples**
Seventeenth	**5**	Vector in plane	*Vector-valued function Spaces*	**The lecture**	**General questions, discussion, explanations and solving examples**
Eighteenth	**5**	Algebraic operations on vectors	*Vector-valued function Spaces*	**The lecture**	**General questions, discussion, explanations and solving examples**
Nineteenth	**5**	Vector projection and scaler component	*Vector-valued function Spaces*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty	**5**	Triple product	*Vector-valued function Spaces*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-one	**5**	**Equation of line in space**	**plane**	**The lecture**	**General questions, discussion, explanations and solving examples**

Twenty-two	**5**	Vector-valued functions with applications	**Vector spaces**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-three	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**-**
Twenty-four	**5**	**Domain and range Limits and continuity in higher dimensions**	*Partial Derivatives*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-five	**5**	Partial derivatives of functions of more than two variables	*Partial Derivatives*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-six	**5**	Second and higher Partial derivatives	*Partial Derivatives*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-seven	**5**	Total differential and Implicit differentiation revisited	*Partial Derivatives*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-eight	**5**	**Transformation Chain rule Correspondence to partial derivatives Homogeneous functions**	*Partial Derivatives*	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-nine	**5**	**Double integrals**	*Multiple Integrals*	**The lecture**	**General questions, discussion, explanations and**

					solving examples
Thirty	**5**	**Double integral in polar coordinates Improper integral**	*Multiple Integrals*	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-one	**5**	**Triple integrals over general region Triple integrals over spetial coordinates**	*Multiple Integrals*	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-two	**5**	**Student Evaluation**	**Monthly exam**	**-**	**-**

32. Course Evaluation.

Daily exams score: 10,

nework and reports score: 10,

nthly exams score: 30;

al exam score: 50

33. Learning and teaching references

Required textbooks	1-Thomas' Calculus, 4th edition, Joel hass, christopher hell and maurice d. weir :8 to 12-chapter.
Main References	- Loomis, L. H., & Sternberg, S. (1968). *Advanced calculus.* - Buck, R. C. (2003). *Advanced calculus*. Waveland Press. - Fitzpatrick, P. (2009). *Advanced calculus* (Vol. 5). American Mathematical Soc.. - Widder, D. V. (2012). *Advanced calculus*. Courier Corporation. - Friedman, A. (2012). *Advanced calculus*. Courier Corporation.
mmended supporting books and references (scientific journals, reports...)	nost important books and references on Advance Calculus available in the Central Library.
Electronic references, website.	5- Reliable websites. 6- Libraries websites in some international universities

Course Description Form

1. Course Name:
Geometry
2. Course Code:
Bachelor's degree
3. Semester / Year:
2023-2024
4. Description Preparation Date:
24-1-2024
5. Available Attendance Forms:
Daily
6. Number of Credit Hours (Total)
120 hours
7. Course administrator's name (mention all, if more than one name)
Name: Samer Raad Yaseen Email: samer2017@tu.edu.iq
8. Course Objectives

Course Objectives	**Develop students' spatial reasoning and visualization skills, enabling them to analyze and solve three-dimensional geometric problems. This includes understanding properties of 3D shapes, calculating surface areas and volumes, applying geometric transformations, and integrating concepts with real-world applications in fields such as architecture, engineering, and physics.**

9. Teaching and Learning Strategies	
Strategy	- **Visualization and Spatial Thinking** : Use 3D models, diagrams, and digital tools to help students develop spatial reasoning. Encourage students to mentally manipulate and rotate shapes. - **Hands-on Activities –** Incorporate physical models, origami, and interactive software to allow students to explore geometric concepts through hands-on learning. - **Real-World Applications –** Connect lessons to practical applications in architecture, engineering, and science to enhance students' understanding and engagement.

	- **Problem-Solving Approach** : Use step-by-step problem-solving techniques, encouraging students to break down complex 3D problems into simpler components. - **Technology Integration –** Utilize dynamic geometry software (such as GeoGebra or AutoCAD) to visualize and analyze three-dimensional structures. - **Collaborative Learning –** Encourage group work and discussions to promote peer learning and different perspectives in approaching geometric problems. - **Conceptual Understanding Before Computation –** Focus on understanding the properties and relationships of 3D figures before introducing formulas and calculations. - **Assessment and Feedback –** Use formative assessments, quizzes, and projects to track student progress and provide timely feedback.

10. Course Structure

methodek	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
۳۰	۹۰	**Strong Mathematical Background –** A solid foundation in mathematics, particularly in geometry, algebra, and trigonometry, to effectively explain three-dimensional concepts. **Degree in Mathematics or Education –** A bachelor's degree in mathematics, mathematics education, or a related field is typically required. Advanced degrees (master's or PhD) may be beneficial for higher education levels. **Teaching Certification –** A valid teaching license or certification, depending on the educational institution and country-specific	**Introduction to Geometry** Basic geometric concepts (points, lines, planes) History and development of geometry Importance and applications of geometry in real life **Euclidean Geometry** Axioms and postulates of Euclid Properties of lines, angles, and triangles Parallel postulate and its implications Congruence and similarity of shapes Geometric	**Visualization and 3D Modeling –** Use physical models, digital simulations, and interactive 3D software (such as GeoGebra, AutoCAD, or SketchUp) to help students understand three-dimensional shapes and spatial relationships. **Inquiry-Based Learning –** Encourage students to explore and discover geometric principles through guided questions, hands-on activities, and real-world problem-solving scenarios.	**Formative Assessments –** Conduct regular short quizzes, exit tickets, or quick problem-solving exercises to gauge students' understanding and provide immediate feedback. **Summative Assessments –** Use unit tests, final exams, and standardized assessments to evaluate students' overall knowledge and problem-solving skills in solid geometry. **Project-**

		requirements. **Knowledge of Pedagogical Methods –** Familiarity with effective teaching strategies, such as inquiry-based learning, problem-solving techniques, and differentiated instruction. **Proficiency in Technology –** Ability to use digital tools and software like GeoGebra, AutoCAD, or 3D modeling programs to enhance teaching and visualization of geometric concepts. **Communication and Presentation Skills –** Strong ability to explain complex geometric ideas in a clear and engaging manner, adapting to students' learning styles. **Assessment and Evaluation Skills –** Competence in designing and implementing assessments (quizzes, projects, and exams) to measure student progress and understanding. **Interdisciplinary Knowledge –** Understanding of how geometry connects with fields like physics,	constructions and proofs **Solid Geometry (Three-Dimensional Geometry)** Properties of 3D shapes (prisms, pyramids, cylinders, cones, spheres) Surface area and volume calculations Cross-sections of 3D objects Geometric transformations in 3D space Applications in architecture and engineering **Elliptic Geometry (Spherical Geometry)** Definition and principles of elliptic geometry Differences from Euclidean geometry (no parallel lines) Geodesics on a sphere Applications in astronomy, navigation, and global	**Hands-on Activities –** Utilize manipulatives like cubes, spheres, pyramids, and origami to allow students to physically construct and analyze geometric shapes. **Real-Life Applications –** Connect concepts to real-world examples in architecture, engineering, robotics, and physics to show the practical importance of solid geometry. **Collaborative Learning –** Organize group projects, peer discussions, and teamwork-based problem-solving exercises to enhance critical thinking and communication skills. **Technology Integration –** Implement computer-aided design (CAD) tools, augmented reality (AR), and virtual	**Based Assessment –** Assign real-world projects where students design 3D models, analyze architectural structures, or apply geometric principles in engineering contexts. **Hands-on Performance Tasks –** Assess students by having them construct 3D shapes, use digital modeling tools (GeoGebra, AutoCAD), or demonstrate spatial reasoning through physical models. **Portfolio Assessment –** Require students to maintain a portfolio of their work, including solved problems, reflections, and geometric

		engineering, architecture, and computer science to provide real-world applications. **Classroom Management Skills –** The ability to create a positive and structured learning environment that encourages student participation and critical thinking. **Continuous Professional Development –** Willingness to stay updated with advancements in mathematics education, teaching methodologies, and technological tools.	positioning systems (GPS) **Hyperbolic Geometry** Introduction to hyperbolic space Differences from Euclidean and elliptic geometry Models of hyperbolic geometry (Poincaré disk, hyperboloid model) Applications in physics, cosmology, and computer graphics **Analytic Geometry** Cartesian coordinate system Equations of lines, circles, and conics Distance and midpoint formulas Transformations in coordinate geometry **Non-Euclidean Geometry** Overview of non-Euclidean geometries	reality (VR) for an immersive learning experience. **Step-by-Step Problem Solving –** Break down complex 3D problems into simpler steps, teaching students structured approaches to solving volume, surface area, and transformations. **Flipped Classroom Approach –** Assign pre-recorded video lectures or reading materials for students to study before class, allowing in-class time for discussions, problem-solving, and practical applications. **Gamification and Interactive Learning –** Use educational games, puzzles, and challenges to make learning geometry more engaging and interactive. **Assessment and Feedback**	drawings, to track their progress over time. **Peer and Self-Assessment –** Encourage students to evaluate their own work and that of their peers, fostering critical thinking and self-reflection. **Oral Presentations and Explanations –** Have students explain geometric concepts, demonstrate problem-solving techniques, or present their projects to assess comprehension and communication skills. **Real-World Application Tasks –** Develop assessments that require students to solve practical problems,

			(elliptic and hyperbolic) Impact on modern mathematics and physics Relationship with general relativity **Transformational Geometry** Translation, rotation, reflection, and dilation Symmetry and tessellations Applications in computer graphics and design **Projective Geometry** Principles of perspective and projection Applications in art and computer vision Homogeneous coordinates **Topology and Geometric Structures** Topological properties of geometric shapes Euler's formula and polyhedra Knot theory and its applications	– Apply formative assessments, quizzes, and hands-on projects to evaluate students' progress and provide constructive feedback for improvement.	such as calculating the volume of a building, designing a 3D object, or analyzing geometric properties in daily life. - **Rubric-Based Grading –** Use clear grading rubrics to evaluate assignments, projects, and presentations, ensuring transparency and consistency in assessment. - **Interactive and Gamified Assessments –** Incorporate digital quizzes, puzzles, and interactive tests to make assessment more engaging and adaptive.

Course Description Form

1. Course Name:
Headway (pre-intermediate)
W Course Code:
Bachelor's degreee
3. Semester / Year:
2023-2024
4. Description Preparation Date:
29/1/2024
5. Available Attendance Forms:
Daily
6. Number of Credit Hours (Total) / Number of Units (Total):
60 hours / 14 Units
7. Course administrator's name (mention all, if more than one name)
Name: Assist.Lect. Israa Bahram Azeez Assist.Lect. Noor Arkan Galib Email: israa.bahram88@tu.edu.iq noor.arkan89@tu.edu.iq
name

Course Objectives	13. Enabling the students to: ❖ Read and write in English ❖ Follow the basic rules of the English language. ❖ Understand the ways of life in English-speaking societies, especially the British and American, and some of the differences between them. ❖ Communicate linguistically. ❖ Understand the language of films and the internet. 14. Teaching the students English language in smooth and simple manner. 15. Urging the students to solve the exercises and apply the rules. 16. Encouraging them to continue learning English language lessons by following programs in English and listening to conversation.

	17. Developing the Students' skills in expressing himself and his ability to speak orally. 18. Developing the students' conversational skills and reading skills through the exercises in the student book

9. Teaching and Learning Strategies

Strategy	• The standard method (giving lectures). • The text method. • Brainstorming method. • Some modern strategies.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
October 1 Unit One & Two	1	Using a bilingual dictionary; words with multiple meanings	Teaching tenses of English language	Lecture	Discussion and exam
October 2 Unit Three	1	Describing countries, daily life collocations	Teaching how to ask questions	Lecture	Discussion and exam
October 3 Unit Four	1	Making connections (break/mend, lose/find), word formation (discuss → discussion)	Teaching got /have got in every day conversation.	Lecture	Discussion and exam
October 4 Unit Five	1	Asking for prices and buying items	Teaching how can identify sentences in present or past	Lecture	Discussion and exam

November 1 Unit Six	1	Describing towns, synonyms and antonyms	Teaching past simple Using much/many	Lecture	Discussion and exam
November 2 Unit Seven	1	Describing bands and music	Using countable a few/a little of one syllable	Lecture	Discussion and exam
November 3 Unit Eight	1	Talking about Jobs and travelling abroad	The use of comparative and superlative	Lecture	Discussion and exam
November 4 Unit Nine	1	Learning to use collocations (*take a photo, get angry*)	Time and conditional clauses (*as soon as, when, until*); first conditional (*If I pass my exam, I'll...*)	Lecture	Discussion and exam
December 1 Unit Ten	1	Learn the verb patterns	Practicing of present perfect	Lecture	Discussion and exam
December 2 Unit Eleven	1	How to express Feelings	Teaching adverbs	Lecture	Discussion and exam
December 3 Unit Twelve	1	Using word pairs	Passive voice	Lecture	Discussion and exam

December 4 Unit Thirteen	1	Verbs and nouns that go together (*tell a story, keep a promise*)	Using short answers	Lecture	Discussion and exam
January 1 Unit Fourteen	1	Learning how to change nouns to plural	making plural with regular and irregular	Lecture	Discussion and exam
January 2	1	Second conditional (*If I were a princess, I'd live in a castle*)	How can use determiners in formulating questions and answers	Lecture	Discussion and exam
January 3	1	Learning how to write letters	Formulating positive and negative	Lecture	Discussion and exam
January 4	1	Differentiate between the **Simple Present/Past** (habitual actions, facts) and the **Present/Past Continuous** (ongoing actions at a specific time).	Practicing two forms of present and past	Lecture	Discussion and exam
February 1	1	Use **wh- questions** correctly (*who, what, when, where, why, how, which, whose*) in different tense	Practicing question words	Lecture	Discussion and exam
February 2	1	Distinguish between *can/can't* and other modals like *must* and *should* in different contexts.	Practicing can/can't	Lecture	Discussion and exam
March 1	1	Use *was/were* correctly for **past simple statements, negatives, and questions** (*She was at home. They were late*).	Practicing was/were	Lecture	Oral Test

March 2	1	Understand the difference between **singular and plural possessives** (*John's book vs. the students' books*).	Practicing /s'/ plural	Lecture	Oral Test
March 3	1	Use **time prepositions** correctly (*at 5 PM, on Monday, in July*).	How to indicate time	Lecture	Discussion and exam
March 4	1	Respond correctly with **short answers** in negative forms (*No, I don't. No, she isn't. No, they weren't.*).	Negative short answers	Lecture	Discussion and exam
April 1	1	Differentiate between **some** (affirmative, offers, requests) and **any** (negatives, questions).	Using some/any, each /every, more/most	Lecture	Discussion and exam
April 2	1	Use **prepositions of place** (*on, in, under, next to, between, behind, in front of*).	How to indicate the place	Lecture	Discussion and exam
April 3	1	Identify and name **common professions** (*doctor, teacher, engineer, artist*).	Teach jobs	Lecture	Discussion and exam
April 4	1	Use **plural subject pronouns** (*we, they*) and **plural object pronouns** (*us, them*).	Teach plural pronouns	Lecture	Discussion and exam
May 1	1		Revision for all the subjects	Lecture	Discussion and exam
May 2	1		Revision for all the subjects	Lecture	Discussion and exam
May 3&4	-------		Final Exams	----------	---------- --

11. Course Evaluation	
First Course: Monthly Exam: 20 Daily homework: 5 Total: 25 Second Course: Monthly Exam: 20 Daily homework: 5 Total: 25 Total for the 1st and 2nd Courses: 50 Final Exam: 50 Final Grade: 100	
12. Learning and Teaching Sources	
Required textbooks (curricular books, if any)	The Ministry's prescribed book for all the stages
Main references (sources)	----------
Recommended books and references (scientific journal, reports	
Electronic References, Websites	https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en. https://elt.oup.com/student/headway/preint4/?cc=global&selLanguage=en. https://elt.oup.com/student/headway/int/?cc=global&selLanguage=en. https://sc.nahrainuniv.edu.iq/lectures/7092_new-headway-upper-intermediate-students-book.pdf.

Course Description Form

1. Course Name:	
Groups Theory / Second Stage	
2. Course Code:	
Bachelor's Degree	
3. Semester / Year:	
2023/2024	
4. Description Preparation Date:	
03/09/2023	
5. Available Attendance Forms:	
Daily	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours per week, total (90) hours 5 units per week, total (150) units	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Mahera Rabee Qasem Email: mahera_rabee@tu.edu.iq	
8. Course Objectives	
Course Objectives	•Providing students with sufficient knowledge about groups. •Providing students with sufficient knowledge about different types of groups. •Providing students with sufficient knowledge about group properties. •Understanding fundamental concepts such as subgroups, cyclic groups, normal subgroups, quotient groups. •Studying homomorphisms and isomorphisms. •Understanding fundamental theorems of homomorphisms and isomorphisms. •Learning Jordan-Hölder theorem and primitive groups.

Course Objectives	•Providing students with sufficient knowledge about groups. •Providing students with sufficient knowledge about different types of groups. •Providing students with sufficient knowledge about group properties. •Understanding fundamental concepts such as subgroups, cyclic groups, normal subgroups, quotient groups. •Studying homomorphisms and isomorphisms. •Understanding fundamental theorems of homomorphisms and isomorphisms. •Learning Jordan-Hölder theorem and primitive groups.

9. Teaching and Learning Strategies

Strategy	•Managing lectures in a way that connects theoretical concepts to real-life applications to engage students while maintaining the academic integrity of the subject. •Assigning students some group activities and homework. •Allocating a portion of the grade for daily assignments and quizzes.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understanding groups	Definition of algebraic system and semigroup	Lecture	General questions, discussions, and problem-solving
2	3	Understanding groups	Groups: Finite and infinite groups	Lecture	General questions, discussions, and problem-solving
3	3	Understanding group types	Permutation groups, Symmetric groups	Lecture	General questions, discussions, and problem-solving

4	3	Understanding group types	Symmetric group of a square	Lecture	General questions, discussions, and problem-solving
5	3	Understanding group types	Normal groups	Lecture	General questions, discussions, and problem-solving
6	3	Understanding subgroups	Subgroups	Lecture	General questions, discussions, and problem-solving
7	3	Understanding group center	Group center and subgroup product	Lecture	General questions, discussions, and problem-solving
8	3	Understanding cyclic groups	Cyclic groups	Lecture	General questions, discussions, and problem-solving
9	3	Understanding cosets	Cosets	Lecture	General questions, discussions, and problem-solving
10	3	Understanding Lagrange's theorem	Lagrange's theorem	Lecture	General questions, discussions, and problem-solving

11	3	Understanding group index	Group index	Lecture	General questions, discussions, and problem-solving
12	3	Understanding normal subgroups	Normal subgroups	Lecture	General questions, discussions, and problem-solving
13	3	Understanding quotient groups	Quotient groups	Lecture	General questions, discussions, and problem-solving
14	3	Understanding simple groups	Simple groups	Lecture	General questions, discussions, and problem-solving
15	3	Understanding commutator subgroup	Commutator subgroup	Lecture	General questions, discussions, and problem-solving
16	3	Understanding element centralizers and subgroup centralizers	Centralizers of elements and subgroups	Lecture	General questions, discussions, and problem-solving
17	3	Understanding theorems related to simple and quotient groups	Theorems on simple and quotient groups	Lecture	General questions, discussions, and problem-solving

18	3	Student assessment	Monthly exam	_	_
19	3	Understanding homomorphisms	Homomorphisms	Lecture	General questions, discussions, and problem-solving
20	3	Understanding homomorphisms with examples	Examples and theorems on homomorphisms	Lecture	General questions, discussions, and problem-solving
21	3	Understanding group isomorphism	Group isomorphism	Lecture	General questions, discussions, and problem-solving
22	3	Understanding group isomorphism and kernel	Isomorphism and kernel	Lecture	General questions, discussions, and problem-solving
23	3	Understanding the three fundamental theorems of homomorphisms	Three fundamental theorems of homomorphisms	Lecture	General questions, discussions, and problem-solving
24	3	Understanding series and composition series	Series and composition series	Lecture	General questions, discussions, and problem-solving

25	3	Understanding maximal normal subgroups	Maximal normal subgroups	Lecture	General questions, discussions, and problem-solving
26	3	Understanding Jordan-Hölder theorem	Jordan-Hölder theorem	Lecture	General questions, discussions, and problem-solving
27	3	Understanding primitive groups	Primitive groups and Sylow's theorems	Lecture	General questions, discussions, and problem-solving
28	3	Understanding internal and external direct products	Internal and external direct product of two groups	Lecture	General questions, discussions, and problem-solving
29	3	Student assessment	Monthly exam	_	_
30	3	Understanding the concept of rings	Definition of rings with examples	Lecture	General questions, discussions, and problem-solving
31	3	Understanding ideals	Ideals and subrings	Lecture	General questions, discussions, and problem-solving

32	3	Understanding quotient rings	Quotient rings	Lecture	General questions, discussions, and problem-solving

11. Course Evaluation

- Daily Exams Grade: 10
- Homework and Reports Grade: 10
- Monthly Exams Grade: 30
- Final Exam Grade: 50

12. Learning and Teaching Resources

Required textbooks(curricular books, if any)

- Introduction to Modern Abstract Algebra by David Burton, translated by Abdul-Al Jassim

Main References (Sources):

- Introduction to Group Theory by Walter Ledermann & Alan J. Weir
- Introduction to Modern Abstract Algebra by David M. Burton
- Group Theory by M. Suzuki

Supplementary Books and References (Scientific Journals, Reports, etc.):

Most important books and references on abstract algebra available in the central library.

Electronic References, Websites

Reputable online sources.

Library websites of major universities.

Course Description Form

1. Course Name:	
Developmental Psychology	
2. Course Code:	
3. Semester / Year:	
2023-2024	
4. Description Preparation Date:	
1/11/2023	
5. Available Attendance Forms:	
Attendance Study	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 Hours weekly :(30 weeks- 60 Hours per year) / 4 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Mays Amer Hashim Email: mays.a.hashim@tu.edu.iq	
8. Course Objectives	
Course Objectives	• Enabling students to learn about human growth development. • Enabling students to learn about growth stages. • Enabling students to learn about growth requirements. • Enabling students to learn about growth problems. • Enabling students to deal with secondary school students. • Enabling students to communicate properly with school students. • Enabling students to understand student psychology.
9. Teaching and Learning Strategies	

Strategy	• Explaining the subject matter in the classroom using lecture and discussion methods. • Skill in creating mini research projects. • Giving examples and modern applications to enhance understanding.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Vocabulary Basics	Research Methods in Developmental Psychology	Lecture and discussion method	Asking and answering questions from the student
2	2	Vocabulary Basics	Experimental method	Lecture and discussion method	Asking and answering questions from the student
3	2	Vocabulary Basics	Descriptive method	Lecture and discussion method	Asking and answering questions from the student
4	2	Vocabulary Basics	Longitudinal and transverse method	Lecture and discussion method	Asking and answering questions from the student
5	2	Vocabulary Basics	Sources of information in psychology	Lecture and discussion method	Asking and answering questions from the student

6	2	Vocabulary Basics	General factors and principles of growth	Lecture and discussion method	Asking and answering questions from the student
7	2	Vocabulary Basics	Factors affecting growth	Lecture and discussion method	Asking and answering questions from the student
8	2	Vocabulary Basics	The difference between education and learning	Lecture and discussion method	Asking and answering questions from the student
9	2	Vocabulary Basics	Life stages	Lecture and discussion method	Asking and answering questions from the student
10	2	Vocabulary Basics	The effect of heredity and environment on growth	Lecture and discussion method	Asking and answering questions from the student
11	2	Vocabulary Basics	Maturity and learning	Lecture and discussion method	Asking and answering questions from the student
12	2	Vocabulary Basics	Cradle stage	Lecture and discussion method	Asking and answering questions from the student

13	2	Vocabulary Basics	Early childhood stages	Lecture and discussion method	Asking and answering questions from the student
14	2	Vocabulary Basics	Physical growth	Lecture and discussion method	Asking and answering questions from the student
15	2	-	Monthly exam	-	-
16	2	Vocabulary Basics	Emotional growth	Lecture and discussion method	Asking and answering questions from the student
17	2	Vocabulary Basics	Middle childhood	Lecture and discussion method	Asking and answering questions from the student
18	2	Vocabulary Basics	Physical growth	Lecture and discussion method	Asking and answering questions from the student
19	2	Vocabulary Basics	mental development	Lecture and discussion method	Asking and answering questions from the student

20	2	Vocabulary Basics	Emotional growth	Lecture and discussion method	Asking and answering questions from the student
21	2	Vocabulary Basics	late childhood	Lecture and discussion method	Asking and answering questions from the student
22	2	Vocabulary Basics	Puberty	Lecture and discussion method	Asking and answering questions from the student
23	2	Vocabulary Basics	Physical growth	Lecture and discussion method	Asking and answering questions from the student
24	2	Vocabulary Basics	mental development	Lecture and discussion method	Asking and answering questions from the student
25	2	Vocabulary Basics	Emotional growth	Lecture and discussion method	Asking and answering questions from the student
26	2	Vocabulary Basics	Adolescent mental health	Lecture and discussion method	Asking and answering questions from the student

27	2	Vocabulary Basics	Developmental problems in adolescence	Lecture and discussion method	Asking and answering questions from the student
28	2	Vocabulary Basics	adulthood	Lecture and discussion method	Asking and answering questions from the student
29	2	Vocabulary Basics	Old age	Lecture and discussion method	Asking and answering questions from the student
30	2	-	Monthly exam	-	-

11.Course Evaluation
Daily exams, assignments and reports: 10 points, monthly exams: 40 points, final exam: 50 points
12.Learning and Teaching Resources
Nothing
13.Main references (sources)
Developmental Psychology / Kamel Mohamed Mohamed Awida
Developmental Psychology Binder
● Reliable websites. ● Websites of libraries in some Iraqi and Arab universities.

Course Description Form

34.Course name	
partial differential equations -Third stage	
35.Course code	
Bachelor's degree	
36.Semester/Year	
2023-2024	
37. Date this description	
24/1/2023	
38.Available forms of attendance	
Daily	
39.Number of study hours (total) / Number of units (total)	
120 hours	
40.Name of the course administrator (if more than one name is mentioned)	
Raad Awad Hameed	
41.Course objectives	
Subject objectives:	s course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the program description.) The Partial Differential Equations course provides a summary of the most important characteristics of mathematical equations containing the derivative

	sign and completes what was learned from the methods of integration and derivation in the Calculus course, in addition to engineering and physical applications and in various fields of science....
42.Teaching and learning strategies	
The strategy:	• Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson and give importance to the course without straying from the core of the subject so that the material is flexible and interesting and can be understood and analyzed. •Assigning the student some activities inside the class through oral questions interspersed with brainstorming questions with a reward for those who answer the questions and group homework. •Allocating a percentage of the grade for daily homework and tests. • Reviewing the previous material and linking it to the current lecture and using the exploratory and deductive method to link analytical concepts with real reality with the environment and society.

10. Course Structure

Weeks	Hours	Required Learning	Outcomes Unit or Topic	Learning Method	Evaluation Method
First	٤	Introduction to Partial Differential Equations	Introduction to Partial Differential Equations	The lecture	General questions, discussion, explanations and solving examples
Second	٤	Solution of some partial	Solution of some partial	The lecture	General

		differential equations	**differential equations**		**questions, discussion, explanations and solving examples**
Third	٤	**Lagrange method**	**Methods of solving homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Fourth	٤	**How to solve the differential equation of the form** $f(p,q)=0$	**absolute value Methods of solving homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Fifth	٤	**How to solve the differential equation of the form** $z=px+qy+f(p,q)$	**Methods of solving homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Sixth	٤	**How to solve the differential equation of the form** $f(z,p,q)=0$	**Methods of solving homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Seventh	٤	**How to solve the differential equation of the form** $f(x,y,p,q)=0$	Methods of solving homogeneous partial differential equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Eight	٤	**How to solve the**	Methods of solving	**The lecture**	**General**

		differential equation of the form $\boldsymbol{F(x,y,z,p,q)=0}$	homogeneous partial differential equations		**questions, discussion, explanations and solving examples**
Ninth	٤	**Homogeneous linear partial differential equations with constant coefficients and orders**	**Homogeneous linear partial differential equations with constant coefficients and orders**	**The lecture**	**General questions, discussion, explanations and solving examples**
Tenth	٤	**Different real roots**	**Different real roots**	**The lecture**	**General questions, discussion, explanations and solving examples**
Eleventh	٤	**Repeated real roots**	**Repeated real roots**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twelfth	٤	**Imaginary roots**	**Imaginary roots**	**-**	**-**
Thirteenth	٤	$f(x+y)=e^{ax+by}$	Methods of solving homogeneous partial differential equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Fourteenth	٤	$f\ (x\ ,y\ )=\cos(ax+by)$ او $f\ (x\ ,y\ )=sin(ax+by)$	Methods of solving homogeneous partial differential equations	**The lecture**	**-**

Fifteenth	٤	$f(x,y) = x^a y^b$	Methods of solving homogeneous partial differential equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Sixteenth	٤	$f(x,y) = e^{ax+by}\ v$	Methods of solving homogeneous partial differential equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Seventeenth	٤	$f(x,y) = g(ax + by)\ with\ F(a,b) \neq 0$	Methods of solving homogeneous partial differential equations	**The lecture**	**General questions, discussion, explanations and solving examples**
Eighteenth	٤	$f(x,y) = g(ax + by)$ **With** $F(a,b) = 0$	Methods of solving homogeneous partial differential equations	**The lecture**	**Methods of solving homogeneous partial differential equations**
Nineteenth	٤	**Methods of solving non-homogeneous partial differential equations**	**Methods of solving non-homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty	٤	**Equations with constant coefficients**	**Methods of solving non-homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**

Twenty-one	٤	**Equations with variable coefficients**	**Methods of solving non-homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-two	٤	**Second order equations with variable coefficients**	**Methods of solving non-homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-three	٤	**Equations that can be transformed into homogeneous**	**Methods of solving non-homogeneous partial differential equations**	**The lecture**	**-**
Twenty-four	٤	**Lagrange multipliers method**	**Methods of solving non-homogeneous partial differential equations**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-five	٤	**Fourier series**	Fourier series	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-six	٤	**Conditions that a function must meet to have an immediate series**	Fourier series	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-seven	٤	**Conditions that a function must meet to have an immediate**	Fourier series	**The lecture**	**General questions, discussion,**

		series			**explanations and solving examples**
Twenty-eight	٤	**Expanding the function defined over a part of the interval**	Fourier series	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-nine	٤	**Heat conduction equation integrable bounded functions**	**Heat conduction equation**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty	٤	**Wave equation in one dimension**	**Wave equation in one dimension**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-one	٤	**Laplace's equation in two dimensions**	**Laplace's equation in two dimensions**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-two	٤	**Laplace transform**	**Laplace transform**	**-**	**-**

43. Course Evaluation.

Daily exams score: 10, Homework and reports score: 10,

Monthly exams score: 30; Final exam score: 50

44. Learning and teaching references	
Required textbooks	Introduction to Nonlinear Partial Differential Equations
Main References	- *Evans, Lawrence C. (1998). Partial differential equations (PDF). Providence (R. I.): American mathematical society. ISBN 0-8218-0772-2.* -
Recommended supporting books and references (scientific journals, reports...)	The most important books and references on partial Differential Equation available in the Central Library.
Electronic references, website.	- Reliable websites. - Libraries websites in some international universities

Course Description Form

45.Course name	
Mathematical Analysis-Third stage	
46.Course code	
Bachelor's degree	
47. Semester/Year	
٢٠٢٤/٢٠٢٣	
48. Date this description	
٢٠٢٣/٩/٣	
49. Available forms of attendance	
Daily	
50. Number of study hours (total) / Number of units (total)	
120 hours	
51. Name of the course administrator (if more than one name is mentioned)	
saphory@tu.edu.iq	
52.Course objectives	
Subject objectives:	hematical analysis is one of the main topics in mathematics and is based on the subject of differential and integral calculus. Although there is some similarity in the vocabulary of these two curricula, there is a difference in the study of these courses. While the emphasis is on learning skills in using some concepts such as derivation and integration in the subject of

	differential and integral calculus, the emphasis in the subject of analysis is on the concepts themselves, studying the relationship between them and how they developed and on the logical structure of the subject as a whole. In short, the emphasis in the subject of differential and integral calculus is on answering questions of the type How? while in mathematical analysis it is on questions of the type Why. In addition to the interest in linking the different concepts: 'o learn about the origin of real numbers and the relationship between the field of rational numbers and the field of real numbers. ıe student understands that the field of real numbers is complete and orderly. he student will be familiar with metric space and its properties. ıe student will be familiar with the concepts of sphere and disc and understand how the rest of the concepts (open and closed set, restricted and compact set...) were built based on these two concepts, the open and closed set. 'he student will be familiar with sequences, their convergence and their properties in metric spaces. he student will be familiar with numerical series and power series and understand the conditions for their convergence.

	he student will understand the meaning of continuity for functions defined in metric spaces. he student will understand some applications that depend on the role of continuity with compactness. The student will understand differentiation and its relationship to continuity. he student will know the meaning of integration and its origin. e student will know the meaning of measuring a set and measuring a function and its relationship to the development of integration.
53.Teaching and learning strategies	
The strategy:	anaging the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson and give importance to the course without straying from the core of the subject so that the material is flexible and interesting and can be understood and analyzed. ssigning the student some activities inside the class through oral questions interspersed with brainstorming questions with a reward for those who answer the questions and group homework. locating a percentage of the grade for daily homework and tests.

	viewing the previous material and linking it to the current lecture and using the exploratory and deductive method to link analytical concepts with real reality with the environment and society.

Course Structure

Weeks	Hours	Required Learning	Outcomes Unit or Topic	Learning Method	Evaluation Method
First	٤	Study of bounded sets and linear space	bounded sets and linear space	The lecture	General questions, discussion, explanations and solving examples
Second	٤	Learn Archimedes' Theorem and Solve Equations	properties of real numbers and solution algebraic equations	The lecture	General questions, discussion, explanations and solving examples
Third	٤	Learn about rational and irrational numbers	والغير النسبية الإعداد النسبية والعلاقة بينهم	The lecture	General questions, discussion, explanations and solving examples
Fourth	٤	Recognizing absolute value	absolute value and the relation to metric function	The lecture	General questions, discussion, explanations and solving examples
Fifth	٤	Solutions of the exercises	Solutions of the applied exercises in this chapter	The lecture	General questions, discussion, explanations and

					solving examples
Sixth	٤	Understanding Sequences Definitions and Examples	Different sequences types definitions and examples	The lecture	General questions, discussion, explanations and solving examples
Seventh	٤	Recognizing convergent sequences	convergent sequence and convergence types	The lecture	General questions, discussion, explanations and solving examples
Eight	٤	Recognize the bounded and Cauchy sequences	bounded and Cauchy sequences and the relation between them	The lecture	General questions, discussion, explanations and solving examples
Ninth	٤	Study of Density of Rational and irrational Numbers	Density of Rational and irrational Numbers	The lecture	General questions, discussion, explanations and solving examples
Tenth	٤	Completeness of real numbers	Completeness of real numbers	The lecture	General questions, discussion, explanations and solving examples
Eleventh	٤	Solutions of exercises	Solutions to various and applied chapter exercises	The lecture	General questions, discussion, explanations and solving examples
Twelfth	٤	Student Evaluation	Monthly exam	-	-
Thirteenth	٤	Recognizing sequences in metric space and their convergence	sequences in metric space and their fundamental	The lecture	General questions, discussion, explanations and

			theorems		solving examples
Fourteenth	٤	Student Evaluation	Monthly exam	The lecture	-
Fifteenth	٤	Knowledge of basic principles in topology	basic principles in topology	The lecture	General questions, discussion, explanations and solving examples
Sixteenth	٤	Knowledge of compactness, contraction and basic theorems	compactness, contraction and basic theorems	The lecture	General questions, discussion, explanations and solving examples
Seventeenth	٤	Solutions of exercises	Solutions to various and applied chapter exercises	The lecture	General questions, discussion, explanations and solving examples
Eighteenth	٤	Knowledge of continuity and its types, with some examples	The continuity	The lecture	General questions, discussion, explanations and solving examples
Nineteenth	٤	Knowledge of continuous and discontinuous mapping	continuous and discontinuous mapping	The lecture	General questions, discussion, explanations and solving examples
Twenty	٤	Recognizing continuous functions on compact spaces	continuous functions on compact spaces	The lecture	General questions, discussion, explanations and solving examples
Twenty-one	٤	Recognize the uniformly continuity	the uniformly continuity	The lecture	General questions, discussion, explanations and

					solving examples
Twenty-two	٤	Learn about derivation, its theorems and applications	derivation, its theorems and applications	The lecture	General questions, discussion, explanations and solving examples
Twenty-three	٤	Student Evaluation	Monthly exam	The lecture	-
Twenty-four	٤	Learn about the mean value theorem, Rolle's and Lagrange's theorem, L'Hôpital's rule and solutions to exercises	the mean value theorem, Rolle's and Lagrange's, L'Hôpital's rule and solutions to exercises	The lecture	General questions, discussion, explanations and solving examples
Twenty-five	٤	Recognizing series	Series and it is types	The lecture	General questions, discussion, explanations and solving examples
Twenty-six	٤	Learn the properties of series	the properties of series	The lecture	General questions, discussion, explanations and solving examples
Twenty-seven	٤	Learn Cauchy and Riemann integrals	Introduction of integral	The lecture	General questions, discussion, explanations and solving examples
Twenty-eight	٤	Learn about linear mappings	linear mappings and integral Reimann	The lecture	General questions, discussion, explanations and solving examples
Twenty-nine	٤	Learn about Riemannian integrals and Riemannian	Riemann integrals and their properties	The lecture	General questions, discussion,

		integrable bounded functions			**explanations and solving examples**
Thirty	٤	**Learn about Lebesgue integral**	**Lebesgue integral**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-one	٤	**Learn about Riemann-Stilges integrals with properties of integrals**	**Riemann-Stilges integrals with properties of integrals**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-two	٤	**Student Evaluation**	**Monthly exam**	**-**	**-**

54. Course Evaluation.

ly exams score: 10,

Homework and reports score: 10,

Monthly exams score: 30;

Final exam score: 50

55. Learning and teaching references

uired textbooks	rinciple of Mathematical Analysis by **Walter Rodin**
Main References	- Foundation of Analysis: The Arithmetic of Whole Rational, Irrational and Complex Numbers, by **Edmund Landau**. - Introductory Real Analysis, by Andrey Kolmogorov, Sergei Fomin.

	- The Fundamentals of Mathematical Analysis (2 volumes), by **Grigorii Fichtenholz.** - A Course Of Mathematical Analysis (2 volumes), by **Sergey Nikolsky**. - Mathematical Analysis (2 volumes), by Vladimir Zorich. - A Course of Mathematical Analysis, by **Aleksandr Khinchin.** - Mathematical Analysis: A Special Course, by Georgiy Shilov.
ommended supporting books and references (scientific journals, reports...)	most important books and references on mathematical analysis available in the Central Library.
Electronic references, website.	7- Reliable websites. 8- Libraries websites in some international universities

Course Description Form

1. Course Name:
Statistics and Probability / Third Stage
2. Course Code:
Bachelor's
3. Semester / Year:
2023-2024
4. Description Preparation Date:
24/1/2024
5. Available Attendance Forms:
Daily
6. Number of Credit Hours (Total) / Number of Units (Total)
120 hours
7. Course administrator's name (mention all, if more than one name)
Name: Assistant. Professor Qasim Nasir Husain Email: qasim11@tu.edu.iq
8. Course Objectives

Course Objectives	• Understanding basic concepts: The probability course aims to introduce students to basic concepts in the field of probability such as events, sample area, and probability • Developing analytical abilities: The probability course aims to develop students' analytical thinking skills so that they can analyze problems and scenarios using probability concepts • Identifying probability applications: The course aims to introduce students to the practical applications of probability concepts in fields such as statistics, medical sciences, engineering and finance, and to enhance their understanding of the practical importance of the subject. • Developing calculation skills: The probability course aims to develop students' mathematical calculation skills, including calculating probabilities and various statistical indicators such as the mean, standard deviation and conditional probabilities. • Practical learning: The course aims to provide

	opportunities for students to apply probability concepts to real-world problems, whether through mathematical models, practical experiments or the use of computer software specialized in the field of probability. • Developing practical skills: The course aims to develop teamwork, communication and problem-solving skills

9. Teaching and Learning Strategies

Strategy	Strategy • Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson without straying from the core of the subject so that the subject is flexible and capable of being understood and analyzed. • Assigning the student some group activities and assignments. • Allocating a percentage of the grade for daily assignments and reports.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	General Concepts	Initial Review of Set Theory	Lecture	General Questions, Discussion and Solution Examples
Second	4	General Concepts	Calculating the Total Number of Methods	Lecture	General Questions, Discussion and Solution Examples
Third	4	General Concepts	Identify Order and Disorder Permutations	Lecture	General Questions, Discussion and Solution Examples
Fourth	4	General Concepts	Identify Order and Disorder Combinations	Lecture	General Questions, Discussion and Solution Examples
Fifth	4	Identify the Basics of Probability	Introduction to Probability and its Basic Concepts	Lecture	General Questions, Discussion and Solution Examples
Sixth	4	Identify Sample Space, Events and Their Types	Events and Sample Space	Lecture	General Questions, Discussion and Solution Examples
Seventh	4	Identify the Laws of Probability	Definition of Probability and its Basic Laws	Lecture	General Questions, Discussion and Solution Examples
Eighth	4		Conditional Probability and the Multiplication Rule	Lecture	General Questions,

		Identify Conditional Events	Identifying independent events, inverse probability and addition rule	Lecture	Discussion and Solution Examples
Ninth	4	Identify Conditional Events			General Questions, Discussion and Solution Examples
Tenth	4	Identifying Bayes' theorem and how to use it	Bayes' theorem	Lecture	General questions, discussion and solving examples
Eleventh	4	Identifying Bayes' theorem and how to use it	Completing Bayes' theorem	Lecture	General questions, discussion and solving examples
Twelfth	4	Identifying the concept of a probability function	Probability function	Lecture	General questions, discussion and solving examples
Thirteenth		Student evaluation	Monthly exam	Exam	
Fourteenth	- -	Students' knowledge of the concept of a random variable and how to use it	Random variable	Exam Lecture	General questions, discussion and solving examples
Fifteenth	4	Students' knowledge of the types of a random variable and how to use them.	Types of random variables Lecture General questions, discussion and solving examples	Lecture	General questions, discussion and solving examples
Sixteenth	4	Students' knowledge of the concept of a discrete random variable and how to use it	Discrete random variable	Lecture	General questions, discussion and solving examples
Seventeenth	4	Students' knowledge of the concept of a continuous random variable and how to use it	Continuous random variable	Lecture	General questions, discussion and solving examples
Eighteenth	4	Students' knowledge of the concept of Mathematical expectation and its most prominent characteristics	Mathematical expectation	Lecture	General questions, discussion and solving examples

Nineteenth	4	Students' knowledge of the concept of variance and standard deviation and their most prominent characteristics	Variance and standard deviation	Lecture	General questions, discussion and solving examples
Twenty	4	Students' knowledge of the concept of covariance and its most prominent characteristics	Covariance	Lecture	General questions, discussion and solving examples
Twenty-first	4	Students' knowledge of the concept of the correlation coefficient and its most prominent characteristics	Correlation coefficient	Lecture	General questions, discussion and solving examples
Twenty-second	- -	Students' evaluation	Monthly exam	- -	
Twenty-third	4	Students' knowledge of the types of probability distributions	Types of probability distributions	Lecture	General questions, discussion and solving examples
Twenty-fourth	4	Students' knowledge of the concept of a discrete variable and its uses	Discrete probability distribution	Lecture	General questions, discussion and solving examples
Twenty-fifth	4	Students' knowledge of the concept of a continuous variable and its uses	Continuous probability distribution	Lecture	General questions, discussion and solving examples
Twenty-sixth	4	Students' knowledge of the concept of the Bernoulli distribution and its uses	Bernoulli distribution	Lecture	General questions Discussion and solving examples
Twenty-seventh	4	Students' knowledge of the types of distribution and its uses	Uniform	Lecture	General questions, discussion and solving examples
Twenty-eighth	4	Students' knowledge of the types of distribution and its uses, discussion and solving examples	Gamma distribution	Lecture	General questions on distribution and solving examples

Twenty-ninth Thirty-four ID	4	Students' knowledge of the concept of beta distribution and its uses	Beta distribution	Lecture	General questions, discussion and solving examples

56.Course Evaluation.	
Daily exams score: 10, **Homework and reports score: 10,** **Monthly exams score: 30;** **Final exam score: 50**	
57. Learning and teaching references	
Required textbooks	- Mathematical Statistics by Amir Hanna Hermes, 8 Chapters
Main References	- Introduction to Mathematical Statistics by Hogg, 8 chapters
Recommended supporting books and references (scientific journals, reports...)	- The most important books and references on mathematical statistics available in the internet.
Electronic references, website.	- Reliable websites. - Libraries websites in some international universities

Course Description Form

1. Course Name: :
Numerical Analysis-Third stage
2. Course Code:
Bachelor's degree
3. Semester / Year:
2024/2023
4. Description Preparation Date:
2023/9/3
5. Available Attendance Forms:
Daily + electronic attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
٤ hours per week / ٦٠ hours during the semester / 120 per year
7. Course administrator's name (mention all, if more than one name)
Name: **Hanan Abduljabar Asaad AL-Ukaily** Email: ass.lhananabdjabar@tu.edu.iq
8. Course Objectives

Subject objectives:	Numerical analysis is a branch of mathematics that aims to develop and implement algorithms to solve complex computational problems. The numerical analysis includes several main objectives, including: 1- **Finding approximate solutions to mathematical problems**: Many complex mathematical problems cannot be solved by precise traditional methods. Here comes the role of numerical analysis in providing approximate solutions. 2- **Reduce arithmetic errors**: When performing arithmetic operations, errors may occur due to rounding or number fluctuations. Numerical analysis aims to reduce these errors as much as possible. 3- **Stability Analysis of Computational Methods**: Some computational methods may be unstable, meaning they may produce inaccurate or erroneous results when applied. Numerical analysis is concerned with studying and analyzing the stability of these methods.

	4- **Accelerating calculations**: Providing methods and algorithms that contribute to speeding up calculations, making them more time efficient. Numerical analysis has wide applications in many scientific fields. Here are some examples of how it is used in these areas: 1- **Physics**: Numerical analysis is used to solve differential equations that describe physical phenomena such as planetary motion, fluid dynamics, and wave propagation. 2- **Chemistry:** Numerical analysis can be used to model chemical reactions and predict the properties of materials, which helps in developing new materials and understanding their behavior. 3- **Biology**: Numerical analysis helps model biological processes such as population growth, disease spread, and evolutionary ecology. 4- **Engineering:** Numerical analysis is used to analyze stress and strain in engineering structures, design complex systems, and simulate engineering processes. 5- **Data Science:** Numerical analysis is an essential part of analyzing data and extracting knowledge from it, through developing and applying algorithms to analyze large amounts of data. 6- **Meteorology:** Numerical analysis is used to predict weather and model weather patterns by solving complex equations that describe the movement of the atmosphere.
9. Teaching and Learning Strategies	
Strategy	• Managing the lecture in a practical manner related to the reality of daily life to attract the student to the subject of the lesson and give importance to the course without straying from the core of the subject so that the material is flexible and interesting and can be understood and analyzed. • Assigning the student some activities inside the class through oral questions interspersed with brainstorming questions with a reward for those who answer the questions and group homework.

	•Assigning the student some activities inside the class through oral questions interspersed with brainstorming questions with a reward for those who answer the questions and group homework. • Allocating a percentage of the grade for daily homework and tests. • Reviewing the previous material and linking it to the current lecture and using the exploratory and deductive method to link analytical concepts with real reality with the environment and society.

10. Course Structure

Weeks	Hours	Outcomes Unit or Topic	Required Learning	Learning Method	Evaluation Method
First	4	Mathematical preliminaries	Limits and continuity, sequence, definition of differentiable Rolls theorem, Mean value theorem, Taylor's Polynomial and series	Theoretical lecture	General questions, discussion, explanations and solving examples
Second	4	Error Analysis	Error source Rounding errors, Computational errors, Solid errors, Numerical Approximations errors Programming errors Entered data errors Estimating errors Estimation of function	Theoretical lecture	General questions, discussion, explanations and solving examples
Third	4	Error Analysis	error classification, Representation of numbers, absolute error And relative	Theoretical lecture	General questions, discussion, explanations and solving

					examples
Fourth	**4**	**Solution of Nonlinear Equations**	**Definitions of converge sequence, rate convergence, *Nonlinear equation:* Bisection Method *Finding the root using* Bisection Method**	**Theoretical lecture + Application the program of this method**	**General questions, discussion, explanations and solving examples**
Fifth	**4**	**Solution of Nonlinear Equations**	**Newton's Method, Algorithm of Newton's Method Convergence using Newton's Method**	**Theoretical lecture + Application the program of this method**	**General questions, discussion, explanations and solving examples**
Sixth	**4**	**Solution of Nonlinear Equations**	**Secant Method, Algorithm of Secant Method Convergence using Secant Method**	**Theoretical lecture + Application the program of this method**	**General questions, discussion, explanations and solving examples**
Seventh	**4**	**Solution of Nonlinear Equations**	**Fixed- Point Iteration Method, Algorithm of Fixed-Point Iteration Method Convergence using Fixed-Point Iteration Method and some theorems**	**Theoretical lecture + Application the program of this method**	**General questions, discussion, explanations and solving examples**
Eight	**4**	**Numerical Solution of linear Systems Equation**	**Direct Technique, Gaussian Elimination**	**Theoretical lecture**	**General questions, discussion, explanations and solving examples**
Ninth	**4**	**Numerical Solution of linear Systems Equation**	**Partial pivoting & Decomposition Matrix method**	**Theoretical lecture + Application the program of**	**General questions, discussion, explanations**

				this method	and solving examples
Tenth	4	Numerical Solution of linear Systems Equation	Doolittle's method & Crout's method Cholet's method	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Eleventh	4	Student Evaluation	Monthly exam	-	-
Twelfth	4	Numerical Solution of linear Systems Equation	Iterative techniques 1- Jacobi Iterative method	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Thirteenth	4	Numerical Solution of linear Systems Equation	2-Gauss- Seidel Method	Theoretical lecture	General questions, discussion, explanations and solving examples
Fourteenth	4	Numerical Solution of linear Systems Equation	Convergence of Gauss- Seidel Iterative Method	Theoretical lecture + Application the program of this method	-
Fifteenth	4	Numerical Solution of linear Systems Equation	Successive Over – Relaxation (SOR)	Theoretical lecture	General questions, discussion, explanations and solving examples
Sixteenth	4	Numerical Solution of linear Systems	Convergence of (SOR) Iterative Method	Theoretical lecture + Application	General questions, discussion,

		Equation		the program of this method	explanations and solving examples
Seventeenth	4	Interpolation and polynomial Approximation	(Lagrange polynomial)	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Eighteenth	4	Interpolation and polynomial Approximation	Newton interpolator divided differences formula (first & second divided differences)	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Nineteenth	4	Interpolation and polynomial Approximation	Gauss formula :1- Gauss forward formula	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty	4	Interpolation and polynomial Approximation	2- Gauss Backward formula	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty-one	4	Numerical differentiation	Newton forward formula Examples of Newton forward formula	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty-two	4	Numerical differentiation	Newton Backward formula Examples of Newton Backward formula	Theoretical lecture + Application	General questions, discussion,

				the program of this method	explanations and solving examples
Twenty-three	4	Numerical differentiation	and Newton Backward formula	Theoretical lecture + Application the program of this method	-
Twenty-four	4	Student Evaluation	Monthly exam	-	-
Twenty-five	4	Numerical Integration	Newton – cost formula	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty-six	4	Numerical Integration	Trapezoidal formula & Simpsons formula	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty-seven	4	Numerical Integration	Romberg Integration	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty-eight	4	Numerical solutions of Ordinary differential equation (ODE)	Solution of initial – Value problems Euler's method	Theoretical lecture + Application the program of this method	General questions, discussion, explanations and solving examples
Twenty-nine	4	Numerical solutions of	Higher – order Taylors method	Theoretical lecture	General questions,

		Ordinary differential equation (ODE)		**+ Application the program of this method**	**discussion, explanations and solving examples**
Thirty	**4**	**Numerical solutions of Ordinary differential equation (ODE)**	**Range – kutta method of order four**	**Theoretical lecture + Application the program of this method**	**General questions, discussion, explanations and solving examples**
Thirty-one	**4**	**Numerical solutions of Partial differential equation (PDE)**	**Solution of Boundary value problems**	**Theoretical lecture + Application the program of this method**	**General questions, discussion, explanations and solving examples**
Thirty-two	**4**	**Student Evaluation**	**Monthly exam**	**-**	**-**

58.Course Evaluation.

- Daily exams score: 10,

- Homework and reports score: 10,

- Monthly exams score: 30;

- Final exam score: 50

59. Learning and teaching references

Required textbooks	1-**"Numerical analysis" By Richard L. Burden** **"Introduction to Numerical Analysis" By. F. B. Hildebrand.** **"Applied Numerical Analysis" By C. F. Gerald.**
Main References	Introduction to numerical analysis written by Dr. Kazem Muhammad Hussein Al-Lami

	Principles of numerical analysis written by Dr. Ali Al-Seifi and Dr. Ibtisam Kamal Al-Din
ecommended supporting books and references (scientific journals, reports...)	The most important books and references on Numerical Analysis and integration available in the central library.
Electronic references, website.	9- Reliable websites. 10- Libraries websites in some international universities

Course Description Form

1. Course Name:
Rings Theory
2. Course Code:
Math.303
3. Semester / Year:
2023-2024
4. Description Preparation Date:
18/9/2023
5. Available Attendance Forms:
Classroom and Google classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
120 / 6 units
7. Course administrator's name (mention all, if more than one name)
Name: Nada Jasim Mohammed **Email: naya11415@tu.edu.iq**
8. Course Objectives

Course Objectives	• On completion of this course; the student will be abl understand fundamentals • concepts of Sequences series then study the convergence. • Also, study the Rim and Lubuge Integral • •Identify the concept of Ring,Modulo,Representation, its types applications

9. Teaching and Learning Strategies

Strategy	-We use examples and explain writing on board and so use discuses for more understand. So we give homeworks and discuses it. - Brainstorming -Feedback at lecture time -Collaboration and feedback series

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	4	-Student's ability to distinguish and understand cognitively to diagnose special theories and principles. - Practice different styles of mathematics proofs. - Prossessing thinking skills	Definitions of Ring, commutative ring and ring with identity.		Discussion, exercises and exam
2.	4	=	Divisors of zero,Integraldomain		Discussion, exercises and exam
3.	4	=	Subring,Field,Field of divisors		Discussion, exercises and exam
4.	4	=	Ideals,Trivial and proper,Intersection		Discussion, exercises and exam
5.	4	=	The center and characteristic of ring		Discussion, exercises and exam

1.	4	=	The principal ideal		Discussion, exercises and exam
2.	4	=	The smallest ideal, The principal ideal ring		Discussion, exercises and exam
3.	4	=	The maximal ideal - Zorn's lemma		Discussion, exercises and exam
4.	4	=	Cosets, Quotient ring		Discussion, exercises and exam
5.	4	=	The prime ideal and example		Discussion, exercises and exam
6.	4	=	The principal ideal domain		Discussion, exercises and exam
7.	4	=	The idempotent element, Boolean ring		Discussion, exercises and exam
8.	4	=	Nilpotent element, Primary ideal		Discussion, exercises and exam
9.	4	=	Ring homomorphism		Discussion, exercises and exam
10.	4	=	Theorems of the ring homomorphism, Kernel of homomorphism		Discussion, exercises and exam
11.	4	=	Theorems of kernel of homomorphism, Image and types of homomorphism		Discussion, exercises and exam
12.	4	=	The Natural mapping, Isomorphism and the 1st fundamental theorem		Discussion, exercises and exam
13.	4	=	The 2nd and 3rd fundamental theorem of Isomorphism		Discussion, exercises and exam
14.	4	=	The division ring (Skew field)		Discussion, exercises and exam
15.	4	=	Radical ideal		Discussion, exercises and exam
16.	4	=	Nil -radical ring		Discussion, exercises and exam
17.	4	=	Polynomials, Sum, Product, types of Polynomials		Discussion, exercises and exam
18.	4	=	Polynomials ring		Discussion, exercises and exam
19.	4	=	Polynomials field, Division algorithm		Discussion, exercises and exam
20.	4	=	Remainder and Factorization theorems, roots of polynomails		Discussion, exercises and exam
21.	4	=	Reducible& irreducible Polynomials		Discussion, exercises and exam
22.	4	=	Modules and submodules		Discussion, exercises and exam

23.	4	=	Modules homomorphism		Discussion, exercises and exam
24.	4	=	Representation, some types		Discussion, exercises and exam
25.	4	=	Examples		Discussion, exercises and 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 50 + 50 final

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Scientific articles and research available online in the field of statistics and probability •
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Introduction to modern abstract Algebra by :Dvaid M. Burton -
Electronic References, Websites	

1. Course Name:
3rd Stage: New Headway Beginner
2. Course Code:
Bachelor's degree
3. Semester / Year:
2023-2024
4. Description Preparation Date:
31/3/2024
5. Available Attendance Forms:
Class lectures
6. Number of Credit Hours (Total) / Number of Units (Total):
60 hours / 14 Units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Lect. Israa Bahram Azeez **Assist. Lect. Noor Arkan Galeb** **Email: Israa.bahram@88tu.edu.iq** **Noor.arkan89@tu.edu.iq**
8. Course Objectives

Course Objectives	**19. Enabling the students to:** ❖ **Read and write in English** ❖ **Follow the basic rules of the English language.** ❖ **Understand the ways of life in English-speaking societies, especially the British and American, and some of the differences between them.** ❖ **Communicate linguistically.** ❖ **Understand the language of films and the internet.** **20. Teaching the students English language in smooth and simple manner.** **21. Urging the students to solve the exercises and apply the rules.** **22. Encouraging them to continue learning English language lessons by following programs in English and listening to conversation.** **23. Developing the Students' skills in expressing himself and his ability to speak orally.** **24. Developing the students' conversational skills and reading skills through the exercises in the student book**

9. Teaching and Learning Strategies

Strategy	• The standard method (giving lectures). • The text method. • Brainstorming method. • Some modern strategies.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
November 1 Unit One	1	oducing compound words. tering the way of making questions	pound words. v to make a question in English.	Lecture	Discussion and exam
November 2 Unit Two	1	oducing compound words. tering the way of making questions	pound words. v to make a question in English.	Lecture	Discussion and exam
November 3 Unit Three	1	ducing and learning mathematical terms	ematical terms	Lecture	Discussion and exam
November 4 Unit Four	1	oducing collocations vocabularies ognizing linking words with their meanings.	locations in English. junctions	Lecture	Discussion and exam
December 1 Unit Five	1	oducing collocations vocabularies ognizing linking words with their meanings.	locations in English. junctions	Lecture	Discussion and exam
December 2 Unit Seven	1	-Forming sentences with from active to passive voice and vice versa. -Introducing and memorizing suffixes	ive voice in the present simple and continuous. fixes and Prefixes	Lecture	Discussion and exam

		and prefixes.			
December 3 Unit Eeight	1	-Forming sentences with from active to passive voice and vice versa. -Introducing and memorizing suffixes and prefixes.	ive voice in the present simple and continuous. ixes and Prefixes	Lecture	Discussion and exam
December 4	1	Monthly Exam			
January 1 Unit Nine	1	ing and writing numbers in English that are related to mathematics. nthly Exam.	bers	Lecture	Discussion and exam
January 2 Unit Ten	1	exam in Mathematical terms.		Lecture	Discussion and exam
January 3 Unit Eleven	1	-getting a clear idea about the difference between present perfect simple and present perfect continuous. -Monthly exam	ent perfect simple and continuous.	Lecture	Discussion and exam
January 4 Unit Thirteen	1	ducing and reading mathematical terms related to the students' subjects	ematical terms in English.	Lecture	Discussion and exam
February 1 Unit Fourteen	1	exam in Mathematical terms.		Lecture	Discussion and exam
February 2	1	ducing homophones and homonyms and recognizing the difference between them. tering how to use modal verbs	nophones and Homonyms. al Verbs	Lecture	Discussion and exam
February 3	1	ing and writing numbers in English that are related to mathematics.	bers in English sive voice in the past simple form.	Lecture	Discussion and exam

		ning passive sentence in the past simple			
February 4	1	ling mathematical terms	ematical terms in English	Lecture	Discussion and exam
March 1	1	Mastering how to use two verbs in a sentence.	patterns	Lecture	Discussion and exam
March 2	1	ning how to read and pronounce words end with –ed and es-	d –ed pronunciation	Lecture	Discussion and exam
March 3	1	hly Exam		Lecture	Oral Test
March 4	1	ducing and reading mathematical terms.	ematical terms in English	Lecture	Oral Test
May 1		exam in Mathematical terms.		Lecture	Discussion and exam
May 2					
May 3	1	Revision	Revision	Lecture	Discussion and exam
May 4	1	Revision	Revision	Lecture	Discussion and exam
June 1	-------		Final Exams	---------- -------	----------

11. Course Evaluation

First Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Second Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Total for the 1st and 2nd Courses: 50
Final Exam: 50
Final Grade: 100

12. Learning and Teaching Sources

Required textbooks (curricular books, if any)	**The Ministry's prescribed book for all the stages**
Main references (sources)	**----------**

Recommended books and references (scientific journal, reports	
Electronic References, Websites	**https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en.**

Course Description Form

1. Course Name:
Teaching methods
2. Course Code:
3. Semester / Year:
2023-2024
4. Description Preparation Date:
1-9-2023
5. Available Attendance Forms:
Attendance during the second semester (my attendance) + (electronic)
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours per week/(٤٤)
7. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Laila Khaled Khudair Email: lelakhaled@tu.edu.iq
8. Course Objectives

	Course Objectives 1. Introduce students to some basic concepts 2. Introducing Students Planning for Teaching 3. Introduce students to educational and teaching objectives 4. Introducing students to theories and teaching methods 5. Introducing students to the classifications of teaching methods 6. Introduce students to effective teaching 7. Introduce students to common teaching methods 8. Introducing Students to E-Learning Strategy 9. Introduce students to technology-based teaching methods and self-activity 10. Identification and classification of students with special needs 11. Introducing students to recent trends in special needs education 12. Introduce students to the education of people with visual disabilities (teaching methods and support

	methods) 13. Introduce students to the education of people with hearing disabilities (language, communication, teaching techniques) 14. Educating students with mental disabilities and learning disabilities 16. Curriculum definition and planning 17. Curriculum types (traditional curriculum, modern curriculum, hidden curriculum) 18. The concept of the textbook and its importance in the educational process 19. Analysis of textbooks according to educational standards

9. Teaching and Learning Strategies

Strategy	1. Cooperative Education Strategy 2. Discussion and dialogue strategy 3. Brainstorming Strategy 4. Self Learning Strategy 5. Interactive Lecture Strategy

10. Course Structure

Wname	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First week	٢	Introduce students to some general entrance tests	2. Teaching Concept 3. The concept of teaching and its relationship to learning and education 4. Nature of teaching 5. Teaching elements 6. Teaching method concept 7. Teaching style Teaching Strategy	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Second week	٢	2. Introducing Students Planning for Teaching	8. The concept of planning for teaching 9. Importance of lesson planning 10. Types of planning 11. Characteristics of effective planning	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Third week	٢	Introduce students to educational and teaching objectives	3. Teaching Objectives 4. Sources of derivation of educational objectives 5. Target levels 6. Goal Types 7. Importance of goals 8. Educational Objectives 9. Teaching Objectives Standards	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions

Fourth week	٢	Introducing students to theories and teaching methods	10. Teaching methods associated with cognitive theory 11. Teaching methods associated with behavioral theory 12. Teaching methods associated with social theory	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Fifth week	٢	Introducing students to the classifications of teaching methods	13. Teaching methods classifications 14. Selection of teaching methods 15. Importance of teaching methods	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Week 6	٢	----------	6. First exam	----------	Essay Tests Objectivity
Week 7	٢	Introduce students to effective teaching	16. Definition of effective teaching 17. Effective teaching functions 18. Principles of effective teaching 19. Effective teaching conditions	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Eighth week	٢	Introducing Students to E-Learning Strategy	21. E-learning Concept 22. Nature of E-Learning E-Learning Obstacles Project Method	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Week Nine	٢	ntroduce students to - E-learning Concept	23. E-learning Concept 24. Nature of E-Learning E-Learning Barriers	Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Week 10	٢	----------	Exam	----------	Essay Tests Objectivity
Week 11	٢	Introduce students to technology-based teaching methods and self-activity	25. Education technology concept 26. Importance of technology-based teaching methods 27. Distance learning	. Discussion and dialogue strategy Brainstorming Strategy Cooperative Education Strategy	Discussion and exchange Opinions
Week 1٢	٢	. Identification and classification of students with special needs	What is meant by people with special needs and their classifications	Discussion and dialogue strategy	Discussion and exchange

Week 13	2	Introducing students to recent trends in special needs education	29. Identifying recent trends in special needs education 30. Employing recent trends in special needs education	Discussion and dialogue strategy	Opinions
Week 14	2	Introducing students to recent trends in special needs education	31. Concept of visual impairments (teaching methods and support methods)	Discussion and dialogue strategy	Discussion and exchange
Week 15	2	Introduce students to the education of people with visual disabilities (teaching methods and support methods)	Concept of hearing disabilities (language, communication, teaching techniques)	Discussion and dialogue strategy	Opinions
Week 16	2	Introduce students to the education of people with hearing disabilities (language, communication, teaching techniques)	The Concept of Persons with Mental Disabilities and Learning Disorders	Discussion and dialogue strategy	Discussion and exchange Opinions
Week 17	2	Educating students with mental disabilities and learning disabilities	34.The concept of autism spectrum disorder and difficulties with social interaction	Discussion and dialogue strategy	Discussion and exchange Opinions
Week 18	٢	Curriculum definition and planning	Concept and Planning of Curricula	Discussion and dialogue strategy	Discussion and exchange Opinions
Week 19	٢	Curriculum types (traditional curriculum, modern	Curriculum types (traditional curriculum, modern curriculum, hidden curriculum)	Discussion and dialogue strategy	Discussion and exchange Opinions
Week 20	٢	. The concept of the textbook and its importance in the educational process	Curriculum types (traditional curriculum, modern curriculum, hidden curriculum)	Discussion and dialogue strategy	Discussion and exchange Opinions
Week 21	٢	Analysis of textbooks according to educational standards	Analysis of textbooks according to educational standards	Discussion and dialogue strategy	Discussion and exchange Opinions

11 Course evaluation

Distribution as follows: 25 degrees monthly exams - daily 5 degrees daily, final grade monthly 30
Degree for the final exams of the second course (70)

12. . Learning and Teaching Resources

Main references (sources)	There are no sources.

Recommended supporting books and references (scientific journals, reports...)	- Zaitoun, Kamal Abdel Hamid, (2003), Teaching Models and Skills, Ola Books, Abdel Khaliq Street, Cairo. -Jaber, Walid Ahmed (2005), General Teaching Methods, Planning and Educational Applications, Dar al-Fiqh, Amman
Recommended supporting books and references (scientific journals, reports...)	- Al-Tanawi, Effat Mustafa, (2009), Effective Teaching Planning His Skill Strategies His Calendar, Dar Al-Masirah Publishing and Distribution, Amman
E-references, websites	https://sites.google.com/view/zamayl/course/5204- https://almo3allem.com/

Course Description Form

60.Course name	
Differential Topology-Four stage	
61.Course code	
Bachelor's degree	
62.Semester/Year	
2023-2024	
63. Date this description	
15\9\2023	
64.Available forms of attendance	
Daily	
65.Number of study hours (total) / Number of units (total)	
120 hours	
66.Name of the course administrator (if more than one name is mentioned)	
draliabd@tu.edu.iq	
67.Course objectives	
Subject objectives:	Differential topology is one of the main topics in mathematics and is based on the subject of differential and integral. At the heart of differential topology are **smooth manifolds**, which are manifolds capable of supporting calculus operations. These structures are pivotal for physicists and engineers alike, offering a mathematically rigorous way to model the continuum of space-time or the shape of objects in 3D space. A smooth manifold is defined by its ability to have

	smooth transitions between local neighbourhoods, which essentially means that one can define differentiable functions on the manifold that behave nicely under transformation. This smoothness criterion allows for the use of differential calculus to explore the manifold's properties. Key concepts studied on smooth manifolds include *differential equations*, *vector fields*, and *tensor fields*, which are essential for understanding physical phenomena in a curved space-time context.
ching and learning strategies	
The strategy:	completion of the course, the student should be able to: an account of central concepts and definitions in differential topology; Sard's theorem and some of its applications; ne and compute mapping degree and intersection number of two submanifolds; ne index of a vector field and state the Poincaré-Hopf theorem; ne Morse function and outline a proof of existence; the classification of one- and two-dimensional manifolds.
Course Structure	

Weeks	Hours	Required Learning	Outcomes Unit or Topic	Learning Method	Evaluation Method

First	**5**	**Smooth structure and smooth manifold**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Second	**5**	Algebra of smooth functions on smooth manifold	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Third	**5**	**Vector fields on smooth manifold**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Fourth	**5**	**Tangent vectors and tangent space**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Fifth	**5**	**Solutions of the exercises**	**Solutions of the applied exercises in this chapter**	**The lecture**	**General questions, discussion, explanations and solving examples**
Sixth	**5**	**Lie Algebra of vector fields of smooth manifolds**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Seventh	**5**	**Tensor algebra of smooth manifold.**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Eight	**5**	**Solutions of exercises**	**Solutions to**	**The lecture**	**General**

			various and applied chapter exercises		**questions, discussion, explanations and solving examples**
Ninth	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**General questions, discussion, explanations and solving examples**
Tenth	**5**	**Lie Algebra of vector fields of smooth manifolds**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Eleventh	**5**	**Tensor algebra of smooth manifold.**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Twelfth	**5**	**Grassmann algebra of smooth manifold operator exterior differentiation**	Smooth Manifold	**-**	**-**
Thirteenth	**5**	**Smooth map. Differential of smooth map**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Fourteenth	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**-**
Fifteenth	**5**	**Connection of vector fields. Dragging and anti-dragging of tensors**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Sixteenth	**5**	**Distribution and integrability**	Smooth Manifold	**The lecture**	**General questions,**

					discussion, explanations and solving examples
Seventeenth	**5**	**Submanifold of smooth manifold**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Eighteenth	**5**	**Generalized Submanifold of smooth manifold**	Smooth Manifold	**The lecture**	**General questions, discussion, explanations and solving examples**
Nineteenth	**5**	Introduction of Lie group and lie algebra	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty	**5**	**Lie group**	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-one	**5**	**Lie algebra**	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-two	**5**	Lie algebra in weak and strong	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-three	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**-**
Twenty-four	**5**	**Lie algebra of lie group**	Lie group and lie algebra	**The lecture**	**General questions,**

					discussion, explanations and solving examples
Twenty-five	**5**	**Homomorphism of lie groups and lie algebras**	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-six	**5**	**The action of lie group on smooth manifold**	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-seven	**5**	**The product of lie group on smooth manifold**	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-eight	**5**	**Solutions of exercises**	**Solutions to various and applied chapter exercises**	**The lecture**	**General questions, discussion, explanations and solving examples**
Twenty-nine	**5**	**Student Evaluation**	**Monthly exam**	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty	**5**	**Weak lie group on smooth manifold**	Lie group and lie algebra	**The lecture**	**General questions, discussion, explanations and solving examples**
Thirty-one	**5**	**Surface of lie group on smooth manifold**	Lie group and lie algebra	**The lecture**	**General questions, discussion,**

					explanations and solving examples
Thirty-two	**5**	**Student Evaluation**	**Monthly exam**	**-**	**-**

68. Course Evaluation.	
y exams score: 10, **ıework and reports score: 10,** **ıthly exams score: 30;** **l exam score: 50**	
69. Learning and teaching references	
uired textbooks	irsch, M. W. (2012). *Differential topology* (Vol. 33). Springer Science & Business Media.
Main References	- Guillemin, V., & Pollack, A. (2010). *Differential topology* (Vol. 370). American Mathematical Soc.. - Mukherjee, A. (2015). *Differential topology*. Berlin: Springer International Publishing. - Bröcker, T., & Jänich, K. (1982). *Introduction to differential topology*. Cambridge University Press. - Munkres, J. R. (2016). *Elementary Differential Topology.(AM-54), Volume 54* (Vol. 54). Princeton University Press. - Dieudonné, J., & Dieudonne, J. A. (1989). *A history of algebraic and differential topology, 1900-1960* (pp. 598-600). Boston: Birkhäuser.
ommended supporting books and references (scientific journals, reports...)	most important books and references on differential topology available in the Central Library.

Electronic references, website.	11- Reliable websites. 12- Libraries websites in some international universities

Course Description Form

1. Course Name: complex analysis
2. Course Code: Bachelor's
3. Semester / Year: 4
2023-2024
4. Description Preparation Date:10\9\2023
5. Available Attendance Forms: daily
6. Number of Credit Hours (Total)120 / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: suha jumaa hammad Email:suhajumaa1987@tu.edu.iq
8. Course Objectives

Course Objectives	• Finding solutions to some equations that have no solution in real numbers • The student's knowledge of differentiation and integration methods for complex functions • The student's knowledge of the largest set of numbers

	•

9. Teaching and Learning Strategies

Strategy	Linking the lecture to reality as much as possible so that the student learns to benefit from his studies in reality. Give importance to the applied aspect

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subj name	Learning method	Evaluation method
1	4	Identify sets of numbers in addition to complex ones Complex number in Cartesian form Complex number in polar form	Complex number	lecture	Examples and questions
2	4	Representing a number geometrically			
3	4	Converting a number from the Cartesian form to the polar form			
4	4	Converting a number from the polar form to the Cartesian form			
5	4	Square roots of complex numbers Cube roots of complex numbers Complex equations			
6	4	Methods for solving complex equations			
7	4	Complex functions The limit of a complex function			
8	4	Limit theories Continuity			
9	4	Analytical functions			
10	4	Cauchy-Riemann Cartesian formula			
11	4	Cauchy-Riemann polar formula			
12	4	Harmonic functions Methods for finding harmonic			

13	4	conjugates			
14	4	Laplace Cartesian equation Laplace's polar equation Derivative			
15	4	Complex integration theories			
16	4	Complex integration theories			
17	4	Cauchy-Corsa integral theorem Cauchy-Riemann theorem Integration in both forms			
18	4	sequences			
19	4	series			
20	4	singular point and residues			
21	4				
22	4				
23	4				
24	4				

Course Description Form

1. Course Name:
Topology
2. Course Code:
3. Semester / Year:
2023-2024
4. Description Preparation Date:
2023-9-18
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
4 Hours
7. Course administrator's name (mention all, if more than one name) Name : Fatimah Mahmood Mahammed Email : dr.fatimahmahmood@tu.edu.iq Name : Nawras Nazar Sabry Email : nawrasnazae1993@tu.edu.iq
8. Course Objectives

Course Objectives - Study and knowledge of topological spaces - Study types of continuous functions - Study the concept of connoted and compact	.

9. Teaching and Learning Strategies

Strategy	Applying various teaching methods ,including - Giving lectures Discussion method and electronic method.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4-1	**12**	Topological spaces	Open set ,closed set, Bases and subbases	Electronic lectures, smart board ,pen	Written and daily exams with assignments
8-5	12	Topological spaces	Interior , exterior ,boundary, closure of a set	Electronic lectures, smart board ,pen	Written and daily exams with assignments
9-12	12	Connectedness	Separated sets , connected sets, locally connected	Electronic lectures, smart board ,pen	Written and daily exams with assignments
13-16	12	Continuity and topological equivalence	Continuous functions , open and closed and homeomorphism	Electronic lectures, smart board ,pen	Written and daily exams with assignments
17-20	12	Compactness	Covers ,compact sets , locally compact	Electronic lectures, smart board ,pen	Written and daily exams with assignments
21-25	15	Separation axioms	T1 –space , T2-space, regular space and normal space	Electronic lectures, smart board ,pen	Written and daily exams with assignments

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	General Topolgy Seymour lipschutz
Main references (sources)	Topology and maps by T. Husain 1977
Main references (sources) references Recommended books and	Introduced of Topology Shawm series
Electronic References, Websites	

Course Description Form

1. Course Name:
Mathematical Statistics
2. Course Code:
Bachelor
3. Semester / Year:
2023-2024
4. Description Preparation Date:
27-1-2024
5. Available Attendance Forms:
Daily
6. Number of Credit Hours (Total) / Number of Units (Total)
120 Hours
7. Course administrator's name (mention all, if more than one name)
Name: Prof Dr. Mundher Abdullah Khaleel Email: mun880088@tu.edu.iq
8. Course Objectives

Course Objectives	• Acquiring sufficient knowledge about random variables. • Acquiring sufficient knowledge about continuous and discrete probability distributions. • Acquiring sufficient knowledge about the probability function and distribution function. • Calculating the mean and median. • Calculating variance and deviations. • Deriving moment-generating functions. • Applications of statistics in various scientific fields. • Finding statistical functions using integration.

9. Teaching and Learning Strategies	
Strategy	• Managing the lecture in an applied manner related to real-life situations to engage the student with the lesson topic without straying from the core subject, ensuring the material is flexible and easy to understand and analyze. • Assigning students some group activities and assignments.

	• Allocating a percentage of the grade to daily assignments and tests.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction to Mathematical Statistics	Definition of Random Variables and Their Classification	**The Lecture**	General questions, discussion, and solving examples.
2	4	Introduction to Mathematical Statistics	Theorems and Propositions about Random Variable Functions	**The Lecture**	General questions, discussion, and solving examples.
3	4	Introduction to Mathematical Statistics	Deriving Probability Mass Functions and Distribution Functions	**The Lecture**	General questions, discussion, and solving examples.
4	4	Introduction to Mathematical Statistics	Deriving Probability Mass Functions and Discrete Distribution Functions	**The Lecture**	General questions, discussion, and solving examples.
5	4	Introduction to Mathematical Statistics	Deriving Probability Mass Functions and Continuous Distribution Functions	**The Lecture**	General questions, discussion, and solving examples.

6	4	Introduction to Mathematical Statistics	Mathematical Expectation and Its Properties	**The Lecture**	General questions, discussion, and solving examples.
7	4	Introduction to Mathematical Statistics	Moment-Generating Functions	**The Lecture**	General questions, discussion, and solving examples.
8	4	Introduction to Mathematical Statistics	The Moment Function and Its Properties	**The Lecture**	General questions, discussion, and solving examples.
9	4	Introduction to Mathematical Statistics	Statistical Measures	**The Lecture**	General questions, discussion, and solving examples.
10	4	Introduction to Mathematical Statistics	Mode and Median	**The Lecture**	General questions, discussion, and solving examples.
11	4	Introduction to Mathematical Statistics	Quartiles and Percentiles Coefficient of Variation	**The Lecture**	General questions, discussion, and solving examples.
12	4	Introduction to Mathematical Statistics	Skewness, Kurtosis, and Truncation	**The Lecture**	General questions, discussion, and solving examples.

13	4	Evaluation students	Exam 1		
14	4	Probability distribution	Joint Distributions	**The Lecture**	General questions, discussion, and solving examples.
15	4	Probability distribution	Marginal Distributions	**The Lecture**	General questions, discussion, and solving examples.
16	4	Probability distribution	Random Independence	**The Lecture**	General questions, discussion, and solving examples.
17	4	Probability distribution	Cauchy-Schwarz Inequality	**The Lecture**	General questions, discussion, and solving examples.
18	4	Probability distribution	Theoretical Discrete Distributions	**The Lecture**	General questions, discussion, and solving examples.
19	4	Probability distribution	Discrete Uniform Distribution	**The Lecture**	General questions, discussion, and solving examples.

20	4	Probability distribution	Examples and Exercises	**The Lecture**	General questions, discussion, and solving examples.
21	4	Probability distribution	Bernoulli Distribution and Binomial Distribution	**The Lecture**	General questions, discussion, and solving examples.
22	4	Probability distribution	Examples and Exercises	**The Lecture**	General questions, discussion, and solving examples.
23	4	Evaluation students	Exam 2		
24	4	Probability distribution	Poisson Distribution	**The Lecture**	General questions, discussion, and solving examples.
25	4	Probability distribution	Regression Formula and Additive Property	**The Lecture**	General questions, discussion, and solving examples.
26	4	Probability distribution	Examples and Exercises	**The Lecture**	General questions, discussion, and solving examples.

27	4	Probability distribution	Theoretical Continuous Distributions	**The Lecture**	General questions, discussion, and solving examples.
28	4	Probability distribution	Continuous Uniform Distribution	**The Lecture**	General questions, discussion, and solving examples.
29	4	Probability distribution	Normal Distribution	**The Lecture**	General questions, discussion, and solving examples.
30	4	Probability distribution	Exponential Distribution	**The Lecture**	General questions, discussion, and solving examples.
31	4	Probability distribution	Beta Distribution and Gamma Distribution	**The Lecture**	General questions, discussion, and solving examples.
32	4	Evaluation students	Exam 3		
31	4	Probability distribution	Beta Distribution and Gamma Distribution	Lecture	General questions, discussion, and solving examples.

32	4	Evaluation students	Exam 4		

Course Description Form

1. Course Name:
4th Stage: New Headway Beginner
2. Course Code:
Bachelor's degree
3. Semester / Year:
2023-2024
4. Description Preparation Date:
31/3/2024
5. Available Attendance Forms:
Class lectures
6. Number of Credit Hours (Total) / Number of Units (Total):
60 hours / 14 Units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Lect. Israa Bahram Azeez **Assist. Lect. Noor Arkan Galeb** **Email: Israa.bahram@88tu.edu.iq** **Noor.arkan89@tu.edu.iq**
8. Course Objectives

Course Objectives	**25. Enabling the students to:** ❖ **Read and write in English** ❖ **Follow the basic rules of the English language.** ❖ **Understand the ways of life in English-speaking societies, especially the British and American, and some of the differences between them.** ❖ **Communicate linguistically.** ❖ **Understand the language of films and the internet.** **26. Teaching the students English language in smooth and simple manner.** **27. Urging the students to solve the exercises and apply the rules.** **28. Encouraging them to continue learning English language lessons by following programs in English and listening to conversation.**

	29. Developing the Students' skills in expressing himself and his ability to speak orally. **30. Developing the students' conversational skills and reading skills through the exercises in the student book**

9. Teaching and Learning Strategies

Strategy	• **The standard method (giving lectures).** • **The text method.** • **Brainstorming method.** • **Some modern strategies.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
November 1 Unit One	**1**	**oducing compound words.** **tering the way of making questions**	**pound words.** **v to make a question in English.**	**Lecture**	**Discussion and exam**
November 2 Unit Two	**1**	**oducing compound words.** **tering the way of making questions**	**pound words.** **v to make a question in English.**	**Lecture**	**Discussion and exam**
November 3 Unit Three	**1**	**ducing and learning mathematical terms**	**ematical terms**	**Lecture**	**Discussion and exam**
November 4 Unit Four	**1**	**oducing collocations vocabularies** **ognizing linking words with their meanings.**	**locations in English.** **junctions**	**Lecture**	**Discussion and exam**

December 1 Unit Five	**1**	**oducing collocations vocabularies ognizing linking words with their meanings.**	**locations in English. junctions**	**Lecture**	**Discussion and exam**
December 2 Unit Seven	**1**	**-Forming sentences with from active to passive voice and vice versa. -Introducing and memorizing suffixes and prefixes.**	**ive voice in the present simple and continuous. ixes and Prefixes**	**Lecture**	**Discussion and exam**
December 3 Unit Eeight	**1**	**-Forming sentences with from active to passive voice and vice versa. -Introducing and memorizing suffixes and prefixes.**	**ive voice in the present simple and continuous. ixes and Prefixes**	**Lecture**	**Discussion and exam**
December 4	**1**	**Monthly Exam**			
January 1 Unit Nine	**1**	**ing and writing numbers in English that are related to mathematics. nthly Exam.**	**bers**	**Lecture**	**Discussion and exam**
January 2 Unit Ten	**1**	**exam in Mathematical terms.**		**Lecture**	**Discussion and exam**
January 3 Unit Eleven	**1**	**-getting a clear idea about the difference between present perfect simple and present perfect continuous. -Monthly exam**	**ent perfect simple and continuous.**	**Lecture**	**Discussion and exam**
January 4 Unit Thirteen	**1**	**ducing and reading mathematical terms related to the**	**ematical terms in English.**	**Lecture**	**Discussion and exam**

		students' subjects			
February 1 Unit Fourteen	1	exam in Mathematical terms.		Lecture	Discussion and exam
February 2	1	ducing homophones and homonyms and recognizing the difference between them. tering how to use modal verbs	nophones and Homonyms. al Verbs	Lecture	Discussion and exam
February 3	1	ing and writing numbers in English that are related to mathematics. ning passive sentence in the past simple	bers in English sive voice in the past simple form.	Lecture	Discussion and exam
February 4	1	ding mathematical terms	ematical terms in English	Lecture	Discussion and exam
March 1	1	Mastering how to use two verbs in a sentence.	patterns	Lecture	Discussion and exam
March 2	1	ning how to read and pronounce words end with –ed and es-	d –ed pronunciation	Lecture	Discussion and exam
March 3	1	hly Exam		Lecture	Oral Test
March 4	1	ducing and reading mathematical terms.	ematical terms in English	Lecture	Oral Test
May 1		exam in Mathematical terms.		Lecture	Discussion and exam
May 2					
May 3	1	Revision	Revision	Lecture	Discussion and exam
May 4	1	Revision	Revision	Lecture	Discussion and exam

June 1	**-------**		**Final Exams**	**---------- -------**	**----------**

11. Course Evaluation

First Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Second Course:
Monthly Exam: 20
Daily homework: 5
Total: 25
Total for the 1st and 2nd Courses: 50
Final Exam: 50
Final Grade: 100

12. Learning and Teaching Sources

Required textbooks (curricular books, if any)	**The Ministry's prescribed book for all the stages**
Main references (sources)	**----------**
Recommended books and references (scientific journal, reports	
Electronic References, Websites	**https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en.**