

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

Academic Program Description Form for Colleges and Institutes for the Academic Year 2024-2025

University of Thi-Qar
College of Education and Pure science
Departement of Mathematics
Date: 29/1/2025

Signature:

Head Department:

Date:

Samir Bilal
Dr. Hamees Kadhim Ali
Jan 29, 2025

Signature:

Assist. Dean for Scientific Affairs:

Date:

[Signature]
22/6/2025

The file has been verified by the Quality
Assurance and University Performance Division

Director of the Quality Assurance and University Performance Division

Date: *22/6/2025*

Signature:



Prof. Dr.

Dheyaa A. Bilal
Scientific Dean Assistant

Dean's signature:

Emad
- Prof. Dr.
Emad A. Salman
Dean of the College of Education
for Pure Sciences

22/6/2025

Academic Program Description

This academic program description provides a concise summary of the program's key features and the learning outcomes the student is expected to achieve, demonstrating whether the student has made the most of the opportunities available. It is accompanied by a description of each course within the program.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Academic or professional program	Bachelor of Mathematics
4. Certificate	Bachelor
5. Academic System	Annual
6. Accredited accreditation program	Applying for the academic accreditation program
7. Other external influences	The academic calendar changes annually, official holidays, and delayed admission to the first stage.
8. Date	29/1/2025
9. Objectives of the academic program	
<p>Within the framework of the College of Education's general objectives and the specific objectives of the Department of Mathematics, the Department of Mathematics aims to:</p> <ol style="list-style-type: none"> 1. Prepare qualified personnel to contribute to the comprehensive development and progress that Iraq seeks and is witnessing in all areas of life, by enabling them to fill specialized positions in the public and private sectors. 2. The ability to support the teaching of mathematics in educational institutions, including middle and high schools, vocational schools, and various educational and technical institutes. 3. Preparing graduates for careers as professional mathematics teachers in applied and statistical mathematics. 4. Assisting students in pursuing graduate studies by developing their intellectual and research skills. 5. Enabling students to become familiar with scientific research tools and employ them in their fields of study and work. 6. Analyzing problems through mathematical formulation and practical application. 7. Acquiring statistical skills and applying them in the job market. 8. Solving mathematical, computational and statistical problems in various fields of work. 	

10. Required program outcomes, teaching, learning and assessment methods	
A. Cognitive objectives	<ol style="list-style-type: none"> 1. Building a mathematical foundation for students in mathematics and statistics. 2. The ability to solve mathematical problems logically, without improvisation. 3. The ability to choose the correct mathematical methods to solve mathematical problems. 4. Acquire the basic concepts of differential and integral calculus, differential equations, and their classification, as well as acquire topological, algebraic, and statistical concepts. 5. Acquire the ability to develop advanced thinking in understanding mathematical topics, especially applied ones. 6. Acquire as much mathematical and statistical concepts as possible. 7. Familiarize yourself with theories and theories and apply them in practice.
B. Program skill objectives	<ol style="list-style-type: none"> 1. Collecting and organizing data objectively. 2. Preparing students to communicate with other business institutions and academic centers through modern technological communication tools. 3. Providing students with the skills of dialogue and constructive discussion with others. 4. Gaining experience in solving many real-life problems related to mathematical concepts and applications.
C. Emotional and value goals	<ol style="list-style-type: none"> 1. Enhancing student values and professional ethical behavior. 2. Reinforcing the concept of academic integrity and how to communicate it professionally to students. 3. Preparing students for a leadership and responsible role within the classroom. 4. Developing the ability to think and innovate.
D. General and transferable skills (other skills related to employability and personal development)	<ol style="list-style-type: none"> 1. Applied and pure mathematical skills. 2. Computer skills, internet access, and the ability to utilize websites containing mathematical and statistical information. 3. Enabling the student to follow educational methods and advanced technologies and enable them to manage dialogue in a scientific and professional manner, enabling them to engage in discussions with others in the workplace.
11. Learning and teaching methods	
	<ol style="list-style-type: none"> 1. Assigning students math-related homework and assignments. 2. Organizing classroom discussions and group student activities. 3. Using on-screen presentation techniques, computers, and various visual aids. 4. Writing scientific reports and analyzing data electronically using various statistical programs.
12. Evaluation methods	
	<ol style="list-style-type: none"> 1. Conducting daily and semester exams. 2. Pose questions and have students participate in solving them orally.

3. Organizing groups tasked with solving questions as a form of entertainment that includes a scientific aspect.

13. Course Outline

Hours		Course Name	Units No.	Level
Practical	Impractical			
2	3	Calculus	8	1 st Stage
2	2	Foundation of Mathematics	6	
2	2	Linear Algebra	6	
2	0	computer I	2	
0	2	General Physics	4	
0	1	Arabic Language	2	
0	1	Democracy and Human rights	2	
0	1	Fundamental of education	2	
0	2	Developmental and Educational Psychology	4	
0	1	English Language	2	
0	5	Advanced Caculus	8	2 nd Stage
0	4	Group Theory	5	
0	4	Systems axioms and geometry	5	
0	4	Ordinary differential equations	6	
2	0	Advanced computers Science	2	
0	2	Growth psychology	4	
0	2	Educational Administration and secondary education	4	
0	2	Scientific research method	4	
0	1	Baath crimes	2	
0	1	English Language	2	
0	4	Mathematical Analysis	6	3 rd Stage
0	4	Numerical Analysis	6	
0	4	Statistics and probability	6	
0	4	Ring Theory	6	
0	4	Partial differential equations	5	
0	2	teaching methods	4	
0	2	Counseling and mental health	4	

0	4	Topology	6	4th Stage
0	4	Mathematical Statistic	6	
0	4	Complex Analysis	6	
0	4	Functional Analysis (Elective 1)	6	
0	4	Operations Research (Elective 2) or (Elective 2)Differential geometr	6	
0	2	Measurement and evaluation	4	
0	2	Practical Education	4	
0	2	Research	2	

14. Planning for personal development

- Developing self-learning by developing a plan that enables students to develop their own capabilities, progress, and seek guidance from specialists in this field in the department, with the assistance of the department head.
- Other extracurricular activities.
- Accurately monitoring the curriculum for each subject in the department.

15. Admission Criteria (setting regulations for admission to a college or institute)

- Student Guide for Central Admission issued by the Ministry of Higher Education and Scientific Research.
- Taking into account the department's admission capacity.
- Central Admission.
- An interview will be conducted in the department, which the student must pass and be in good health.

16. The most important sources of information about the program

- Student Guide for Central Admissions issued by the Ministry of Higher Education and Scientific Research.
- College of Education for Pure Sciences website.

Curriculum skills chart																			
Tick the boxes corresponding to the individual learning outcomes of the program being assessed																			
Required learning outcomes of the program																			
General and transferable skills (other skills related to employability and personal development)				Emotional and value goals				Program skill goals				Cognitive goals				Basic or elective	Course	Course units	Year/level
4D	3D	2D	1D	4C	3C	2C	1C	4B	3B	2B	1B	4A	3A	2A	1A				
	x	x	x		x	x	x	x	x	x	x	x	x		x	Basic	Calculus	8	1 st Stage 2024-2025
	x	x	x		x			x	x	x	x	x	x		x	Basic	Foundation of Mathematics	6	
		x			x	x	x	x	x	x	x	x	x		x	Basic	Linear Algebra	6	
	x	x	x		x		x	x	x	x	x	x	x		x	Basic	computer science	2	
	x	x	x		x	x	x	x	x		x		x		x	Basic	General Physics	4	
	x	x	x		x	x	x		x	x	x			x	x	Basic	Arabic Language	2	
	x	x	x		x	x	x		x	x	x	x	x		x	Basic	Human rights and democracy	2	
	x	x	x		x	x	x		x	x		x	x		x	Basic	Principles of education and teaching	2	
	x		x		x	x	x		x	x	x		x		x	Basic	Developmental and Educational Psychology	4	
	x	x	x			x	x		x	x		x	x		x	Basic	English Language	2	

	X	X	X		X	X	X	X	X	X	X	X	X		X	Basic	Advanced Caculus	8	2nd Stage 2024-2025
	X		X		X	X	X		X	X	X	X	X		X	Basic	Group Theory	5	
	X	X	X		X	X	X	X		X	X		X		X	Basic	Systems axioms and geometry	5	
	X	X	X		X	X	X	X	X	X	X	X	X		X	Basic	Ordinary differential equations	6	
	X		X		X	X	X	X	X	X	X	X	X		X	Basic	Advanced computers Science	2	
	X		X		X		X		X	X		X			X	Basic	Growth psychology	4	
	X	X	X		X	X	X		X		X	X			X	Basic	Educational Administration and secondary education	4	
	X		X		X	X	X		X	X	X	X			X	Basic	Scientific research method	4	
	X	X	X		X	X	X		X	X		X			X	Basic	Baath crimes	2	
	X	X	X		X	X	X		X	X	X	X		X	X	Basic	English Language	2	
	X	X	X		X	X	X	X	X	X	X	X	X		X	Basic	Mathematical Analysis	6	3rd Stage 2024-2025
	X	X	X		X	X	X	X	X	X	X	X	X		X	Basic	Numerical Analysis	6	
	X	X	X		X	X	X	X	X	X	X	X	X		X	Basic	Statistics and probability	6	
	X	X	X		X		X	X	X	X	X	X	X		X	Basic	Ring Theory	6	

	X	X	X		X	X	X	X	X		X	X	X		X	Basic	Partial differential equations	5	
	X	X	X		X	X	X		X	X	X	X			X	Basic	Teaching methods	4	
	X	X	X		X	X	X		X	X	X	X			X	Basic	Counseling and mental health	4	
	X		X		X		X	X	X		X	X	X		X	Basic	Topology	6	4 th Stage 2024-2025
	X	X	X		X	X	X		X	X	X	X	X		X	Basic	Mathematical Statistic	6	
	X		X		X	X		X	X	X	X	X	X		X	Basic	Complex Analysis	6	
	X	X	X		X	X	X	X		X	X	X			X	Basic	Functional Analysis (Elective 1)	6	
	X	X	X		X	X	X	X		X	X	X			X	Basic	Operations Research (Elective 2) or Differential geometr (Elective 2)	6	
	X	X	X		X		X		X	X		X			X	Basic	Measurement and evaluation	4	
	X	X	X		X	X	X		X	X	X	X	X	X	X	Basic	Practical Education	4	
	X		X		X	X	X	X	X	X		X	X	X	X	Basic	Research	2	

1st Stage

Course description form

Course description: This course description provides a concise summary of the main features of the course and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Linear Algebra
4. Lectures	48
5. Year	2024-2025
6. Study hours	4 hrs. per a week
7. Date	5/1/2025
Course Objective	
Learning the definition of vector space and subspace	
Learning the matrices and properties of them.	
Application of this basic concepts in other sciences.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

The student should have sufficient knowledge about the geometric properties of spaces

B. Course-Specific Skills Objectives <ul style="list-style-type: none"> • Dealing with different vectors. • Distinguishing between spaces. • Knowing the relationship between different spaces.
C. Thinking Skills <ul style="list-style-type: none"> • Skill in using vectors. • Skills in objective reasoning and using linear algebra. • Skills in exploring related topics.
D. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> • Ask students to complete the assignments after completing each concept to find out what difficulties they face. • Point out students' mistakes and discuss them orally, or hand them the homework solutions after writing down the necessary explanations for the errors, if any. • Clarification of the paragraphs in which the student made mistakes in the weekly exams as well.
Teaching and learning methods
<ul style="list-style-type: none"> • Use written lectures.. • Use interrogation and direct questions. • Discuss the solutions to questions and exercises.
Evaluation methods
<ul style="list-style-type: none"> • Weekly tests. • Semester tests. • Daily homework.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
discussion and questions	Presentation and explanation	Linear systems		6	1,2
discussion and questions	Presentation and explanation	Matrices and algebraic operations		6	3,4
discussion and questions	Presentation and explanation	Determinants		6	5,6
discussion and questions	Presentation and explanation	Vector space and subspaces		9	7,8,9
discussion and questions	Presentation and explanation	Linearly independents		3	10
discussion and questions	Presentation and explanation	Span sets		3	11

discussion and questions	Presentation and explanation	Base and dimensional of vector spaces		6	12,13
discussion and questions	Presentation and explanation	Row order and column order of a matrix and the relationship between them		6	14,15
discussion and questions	Presentation and explanation	Standard orthogonal foundations and theorems		9	16,17,18
discussion and questions	Presentation and explanation	Linear transformations and properties of them		6	19,20
discussion and questions	Presentation and explanation	Kernal and range of transformations		3	21
discussion and questions	Presentation and explanation	Matrix of linear transformation		3	22
discussion and questions	Presentation and explanation	Eigen values and eigen vectors		6	23,24

Textbooks	1. Linear Algebra. 2. introduction in linear algebra.
References	1. Bernard Kolman ., "introductory linear Algebra with applications"
Recommended books and references (scientific journals, reports, etc.)	1. Mostow.G.Dand Sampson .J.H"Linear Algebra",London.
Electronic references, websites,.....	

Course development plan

Students are assigned to find practical examples from sources and the Internet, and these are approved as part of the course after being reviewed.

Course Description

Course description: It aims to establish students in the fundamentals of science, encompassing the study of fundamental concepts such as motion, force, energy, and time, as well as topics in classical mechanics, thermodynamics, magnetism, and electricity. Students are trained to solve scientific problems and apply mathematical principles. These subjects help them understand the workings of the universe and their applications in diverse fields.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	General Physics
4. Lectures	Weekly
5. Year	First and Second Semesters / First Stage
6. Study hours	4 hrs.
7. Date	11/ 12/ 2025
Course Objective	
<ul style="list-style-type: none"> To teach students the laws of physics and how to apply them in real- life situations. To teach students the terminology of general physics. 	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- Enable students to understand the law of physics.
- Understand the application of physical laws and their importance in real life.
- Introduce students to general applications of physics.

B. Course-Specific Skills Objectives

- Develop the ability to apply laws
- Encourage logical thinking in finding solutions to problems

C. Thinking Skills

- Daily quizzes, periodic tests, and final exam.

D. Affective and Value-Based Objectives
<ul style="list-style-type: none"> • Link theoretical and practical topics.
E. General and transferable skills (other skills related to employability and personal development).
<ul style="list-style-type: none"> • Developing the student's ability to recognize general physics applications • Developing the student's ability for discussion and dialogue.
Teaching and learning methods
<ul style="list-style-type: none"> • Discussion sessions and classroom activities. • Guiding students to some useful electronic websites. • Providing students with practical examples closely related to real life.
Evaluation methods
<ul style="list-style-type: none"> • Active participation in the classroom is an indicator of student commitment and responsibility.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	theoretical	Scalar and Vector Quantities	Defining scalar and vector quantities and operations on them	2	1
=	=	Motion and its Types	Applications of motion equations in one dimension	3	2
=	=	Motion and its Types	Projectile motion	3	3
=	=	Newton's laws of motion	Newton's laws of motion and equilibrium	3	4
=	=	Work and energy	Calculating work and energy	3	5
=	=	Coulomb's law	Coulomb's law	3	6
=	=	Interpreting likely intended meaning : Electric field density, potential and pressure	Electric field density, potential and pressure conceptually	3	7
=	=	Fluids	Pascal's principle	3	8
=	=	Fluids	Archimedes' principle	3	9
=	=	Fluids	Bernouli's equation for fluids	3	10
=	=	General Laws of thermodynamics	Laws of thermodynamics	3	11
=	=	temperature	Method of measuring temperature	3	12
=	=	temperature	Types of heat transfer	3	13

=	=		First midterm exam	3	14
=	=		First midterm exam	3	15

Textbooks	University physics, Abdul Salam Abdul Amir Talib Nahi Al-khafaji, University of Mosul 2000
References	Principles of University Physics, Muhammad Mirza
Recommended books and references (scientific journals, reports, etc.)	Principles of General physicsC
Electronic references, websites,.....	

Course development plan

- Curriculum content is periodically updated to keep pace with the scientific development and progress taking place in all fields.
- Discussions with students are added and exams are conducted to encourage to study and develop their skills.

Course description form

Course description: This course description provides a concise summary of the key characteristics of the course and the expected learning outcomes for the student to achieve, demonstrating whether they have maximized the benefits of the available learning opportunities. It must be linked to the program description.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Human rights and democracy
4. Lectures	1 hr.
5. Year	2024-2025
6. Study hours	28
7. Date	22-1-2025
Course Objective	
Educating students about the general framework of human rights through understanding the concept and characteristics of human rights.	
Knowing the beginning of interest in human rights in ancient civilizations.	
Enabling the student to know the ways and means through which he can defend his rights stipulated in the Constitution.	
Informing students about human rights in Islam and explaining the role of Islam in preserving these rights.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives <ul style="list-style-type: none"> • Student participation in organizations concerned with human rights. • Introducing students to rights and freedoms • Enabling the student to identify the basic guarantees for exercising and protecting public rights and freedoms. • Introducing the student to judicial guarantees to protect and preserve human rights from violations.
B. Course-Specific Skills Objectives <ul style="list-style-type: none"> • Dialogue and discussion, reinforced with evidence, and reliance on live interactive lectures. Lectures are also sent in PDF format for each lecture.
C. Thinking Skills <ul style="list-style-type: none"> • Instilling a culture of human rights among students and making them more capable of understanding their rights and freedoms.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> • Students understand that human rights are a global issue that concerns all peoples of the world.
E. General and transferable skills (other skills related to employability and personal development) <ul style="list-style-type: none"> • Making students understand the types of rights and freedoms and knowing their rights and duties. • Student participation in organizations concerned with human rights. • His participation in defending human rights that may be violated illegally.
Teaching and learning methods
<ul style="list-style-type: none"> • The dialogue and discussion are enhanced by conducting field lessons to observe the students' performance inside the classroom. • Directing intellectual questions. • Use the blackboard.
Evaluation methods
<ul style="list-style-type: none"> • Conducting weekly and monthly tests for students. • Presenting mini-lessons by students and preparing research and an oral exam, as well as a midterm and final exam.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	The concept of human rights The definition of human rights according to United Nations publications and the characteristics of human rights.	General human rights framework	1	1
Discussion	Theoretical	Human Rights in Eastern Civilizations Mesopotamian and Egyptian Civilizations	Human rights in ancient civilizations	1	2
Discussion	Theoretical	Human Rights in Islam, Judaism and Christianity	Human rights in Islam and heavenly	1	3

			religions		
Discussion	Theoretical	International sources of human rights	Human rights resources	1	4
Discussion	Theoretical	Constitutional guarantees	. Human rights guarantees at the national level	1	5
Discussion	Theoretical	. Judicial oversight of the constitutionality of laws	Judicial guarantees	1	6
Discussion	Theoretical	The principle of dual responsibility - the religious character of Islamic law - Islamic systems	Human Rights Guarantees in Islam	1	7
Discussion	Theoretical	The role of the United Nations in protecting human rights	Human rights guarantees at the international level	1	8
Discussion	Theoretical	The Concept of Democracy - The Relationship Between Human Rights and Democracy	Democracy	1	9
Discussion	Theoretical	Direct - Representative - Semi-Direct Democracy	Forms of democracy	1	10
Discussion	Theoretical	Advantages of a Democratic System - and the Main Components of Democracy	Characteristics and advantages of democracy	1	11
Discussion	Theoretical	Direct and indirect elections, individual and list-based electoral systems, plurality-majority electoral systems, and proportional representation electoral systems.	Election systems	1	12

Textbooks	Human rights and democracy approach.
References	Human Rights Book, written by: Hafez Alwan Hammadi
Recommended books and references (scientific journals, reports, etc.)	The Philosophy of Human Rights, by: Ansam Amer Al-Sudani
Electronic references, websites,.....	www.ohchr.org https://www.un.org/ar/global-issues/human-rights

Course development plan

- Conducting workshops for students to promote a culture of human rights, supplementing the material with information and instructions issued by international organizations concerned with human rights, and introducing new international recommendations that strengthen human rights.

Course description form

Course Description : This course description provides a concise summary of the main characteristics of the course and the expected learning outcomes for students, demonstrating whether they have maximized the benefits from the available learning opportunities. It must be connected to the program description.

1. Educational Institution	College of Education for Pure Sciences at Thi Qar University
2. Scientific Department / Center	Department of Mathematics
3. Course Name / Code	English language
4. Available Attendance Forms	Morning / First Stage
5. Semester / Year	2024-2025
6. Total Credit Hours	14 hours
7. Date of Preparation of This Description	First Semester 19/1/2025
8. Course Objectives	
1. Mastering reading skills	
2. Mastering writing skills	
3. Mastering listening skills	
4. Mastering speaking skills	
A-. Learning Outcomes – Knowledge Objectives	
1. Understanding and using English in a modern and practical way 2. Understanding English culture to facilitate learning 3. Developing cognitive skills in learning a second language 4. Learning a second language to know other societies and cultures	
B- Learning Outcomes – Skill Objectives	

1. Improve reading skills and understanding of ideas. 2. Improve writing skills (paragraphs, grammatical correctness). 3. Improve listening and comprehension skills. 4. Improve speaking and expression skill.
Teaching Methods Lectures with examples and exercises; practical application in sentences, dialogues, paragraph writing; listening to videos and English materials; discussions between teacher and students.
Assessment Methods Written exercises, weekly quizzes, monthly exams, midterm and final exams
C- Affective and Value Objectives 1. Interest in learning vocabulary 2. Passion for knowing English-speaking cultures 3. Active participation in class 4. Ability to express new concepts and search for additional resources
D-Transferable Skills 1. Acquire communication skills 2. Ability to further develop language 3. English proficiency is essential for employment 4. Language skills help in further studies

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	1hr	.Learning the simple present tense	Teach some common verbs with prepositions. Concentrate (on), suffer (from), rely (on), introduce (to), provide (with) and save (from). Teach students that verbs must come with their correct preposition. First, we must know the meaning of each verb, then we start to write each verb in a sentence	Lecture; oral and written tests, biweekly quiz, monthly exam.	Daily exams are given after the lecture, either in the form of written exercises or various oral questions. In addition, there is a quiz every two weeks and a monthly exam according to the syllabus."
2	1hr	Learning to use phrasal verbs in writing an essay	Write a paragraph. Apply all these verbs from the previous lesson in writing a meaningful paragraph. The paragraph should contain varied sentences. Some of these	Lecture; assignments, quizzes.	Same as above

			sentences in the paragraph will include using verbs with their prepositions.		
3	1hr	Learning to use and write different types of sentences: declarative, interrogative, and exclamatory.	Teach students sentence types and their functions: Declarative, Interrogative, Imperative, and Exclamatory sentences. First, the instructor will give students each type with its definition. Secondly, the instructor will present some examples and exercises to the students about these types.	Lecture, practice exercises.	Same as above
4	1hr	Learning to use sentences: declarative, interrogative, and exclamatory in oral dialogue	We will take some informal oral tests about the function of the sentence. For example, the teacher will say orally, "open your books." Students have to listen first and do what the teacher says and then identify the types. Another example: The teacher will ask a question orally, "Do you know the capital of France?" Students first must identify the type or function and then answer the question.	Oral tests, class participation.	Same as above
5	1hr	Learning to identify complex sentence structures that contain relative pronouns (which, who, and that)	Study the relative clause, which, who, and that. The instructor will give students some examples about using the relative pronouns. Students will learn that "that" is used for human and non-human or things. "Who" is used for human beings, and "which" is used for non-human things.	Lecture, exercises.	Same as above
6	1hr	Learning to analyze complex sentences in a reading text by identifying the subject, verb, and complement	In the reading section, the instructor will show the students a passage that includes some relative clause structures, and students will determine the parts of speech, underlining the subject, verb, and complement. For example, "The person who sat there was my friend." Additionally, students need to understand the meaning of each sentence, for instance, "The person who sat there was my friend." <i>Who sat there? A) The person B) The man C) the friend</i>	Reading tasks, comprehension questions.	Same as above
7	1hr	Learning the correct prepositions with verbs in English	each some common verbs with prepositions. Concentrate (on), suffer (from), rely (on), introduce (to), provide (with), and save (from). Teach students that verbs must come with their correct preposition. First, we must know	Lecture, exercises.	Same as above

			the meaning of each verb, then we start to write each verb in a sentence.		
8	1hr	Learning the simple past tense	The past simple tense	Lecture, exercises.	Same as above
9	1hr	Learning how to negate and question in the simple past tense	The past simple tense: negative/question forms	Exercises, practice.	Same as above
10	1hr	Learning to identify verb tenses	Read a passage in the past simple tense and underline the past-tense verbs.	Reading activity, exercises.	Same as above
11	1hr	Reading a piece and identifying and understanding the main idea, reflexive pronouns, and synonyms	Read a small story in the past tense and understand the main idea of the whole story. Identify the referent pronouns and find some synonyms for some words	Reading, vocabulary exercises.	Same as above
12	1hr	Learning to use question words	Teach how to use Wh- words (who, where, what, why, how much, how many, how often, etc.)	Lecture, practice.	Same as above
13	1hr	Providing various examples of using question words	Provide students with more examples and sentences about Wh- words	Exercises, practice.	Same as above
14	1hr	Quiz to assess understanding of using question words	One small quiz about using Wh- words	Quiz assessment.	Same as above
15	1hr	Comprehensive review of the material before the final exam	Review all previous lessons before taking the final exam.	Class review, final exam preparation.	Same as above

1.Infrastructure:

1- Required Textbooks-	Intermediate Students' Book: The New Headway by Liz & John Soars
2- Main References (Sources)	<input type="checkbox"/> New Headway English Course: Pre-Intermediate by Liz & John Soars <input type="checkbox"/> Listening & Speaking by Sally Logan and Craig Thaine
3- Recommended Books and References (Scientific journals, reports, etc.)	Any book or journal related to developing English language skills
Electronic references, internet sites, etc.	<input type="checkbox"/> Various specialized sites for learning English, for instance, the British Council.

12 Course Development Plan

Focus on external resources related to learning English based on modern scientific principles, emphasizing newly authored books based on recent theories and articles for research and analysis. Focus on proficiency exams (TOEFL, IELTS, and SAT) concerning content to realistically and accurately test English language skills.

2nd Stage

Course description

Course description: This course provides a concise summary of the main course features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description. Advanced calculus is a foundation for mathematical concepts, as it helps develop practical scientific and engineering sense, acquire problem-solving skills, and provide students with the arithmetic operations skills necessary to continue their studies in mathematics.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Advanced Calculus
4. Lectures	weekly lectures
5. Year	2024-2025
6. Study hours	5 hrs. per week
7. Date	10/10/2024
Course Objective	
To provide the student with the skills of calculus operations which are needed for further study in mathematics.	
To provide the student with the skills necessary to be able to give reasonable explanations.	
To provide the student with the critical thinking skills required to solve problems in mathematics.	
To provide the student with the skills of calculus operations which are needed for further study in mathematics.	

Course outcomes, teaching, learning and assessment methods

F. Cognitive objectives

- Enable students to gain knowledge and understanding of the basic principles of advanced calculus.
- Learn about sequences, the mechanism of convergence and divergence, series, and methods for testing them.
- The student acquires sufficient knowledge of the concept of double integration and its applications.
- Get sufficient experience with differentiation and integration of some special functions.
- Give the student experience with graphs in polar coordinates and gain knowledge about converting between Cartesian, cylindrical, and spherical coordinates, as well as quadratic surfaces.
- The student understands the course topics and related mathematical problems.

G. Course-Specific Skills Objectives

- Use mathematical tools to understand and solve advanced differential and integral calculus problems.
- The student will demonstrate the required mathematical laws related to the course content.

H. Thinking Skills

- Enable students to recognize the advantages and disadvantages of problem solving, identify convergent and divergent sequences and series, and study Taylor and Maclaurin series.
- Enable students to solve area problems, change the order of integration, and perform transformations using double and triple integrals.
- Enabling and developing students' ability to draw objects in three-dimensional coordinates.
- Enabling students to solve mathematical problems using the simplest methods.

I. Affective and Value-Based Objectives

- Develop the student's ability to work on completing assignments and submit them on time.
- Attempt to apply concepts by solving various types of exercises.
- Develop the student's ability to engage in dialogue and discussion.
- The student will be able to discuss and justify solutions to mathematical problems and suggest other possible solutions to the problem.

J. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to use technology.
- Developing the student's ability to engage in dialogue and discussion.

Teaching and learning methods

- Daily surprise tests and ongoing weekly quizzed.
- Classroom exercises and activities.
- Directing students to resources containing examples and exercises for their use.
- Delivering theoretical lectures.
- Assigning descriptive homework.
- Directing students to questions to test their comprehension of the subject.
- Managing the lecture in a practical, real-life manner to engage students in the subject matter without straying from the core of the topic, ensuring the material is flexible and amenable to understanding and analysis.
- Allocating a portion of the grade to daily assignments and tests.
- Assigning students to certain group activities and assignments.

Evaluation methods	
<ul style="list-style-type: none"> • Participate in the classroom. • Present activities. • Midterm and final exams and activities. • Homework. • Direct oral questions. • Adhere to the deadlines for submitting assignments and research. 	

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion+ Monthly exams	Theoretical	Sequences of Scalars and Convergence Criteria	Definition, Properties, Types of sequences	5	First
=	=	Infinite sequences	Convergence by definition, Examples	5	Second
=	=	Infinite Series	Definition, Properties	5	Third
=	=	Partial sums sequence	Theorem, examples	5	Fourth
=	=	Series of Scalars and Convergence Criteria	Geometric series, positive term series, Harmonic series	5	Fifth
=	=	Tests for Convergence of Infinite Series	Integral test, divergence test, Basic and Limit test, Root and Ratio test	5	Sixth
=	=	Alternating series	Absolute and conditionally convergence	5	Seventh
=	=	Power Series and the Radius of Convergence	Interval of convergence	5	Eighth
=	=	Represents the functions by a power series	Properties, theorem, examples	5	Ninth
=	=	Maclaurin and Taylor Series given by Definition and from Existing Series	The derivative of Mac. and Taylor series, examples	5	Tenth
=	=	Partial Differentiation	Definition	5	Eleventh
=	=	Chain Rules in Partial Differentiation	Theorems and examples	5	Twelfth
=	=	Multiple Integrals	Properties of integral	5	Thirteenth
=	=	Double Integrals	Changing the order of integration	5	Fourteenth
=	=	Exam			Fifteenth
=	=	Areas	Change of Variables and Jacobians	5	Sixteenth
=	=	Volumes	Examples	5	Seventeenth
=	=	Triple Integrals	The volumes splitting the integral	5	Eighteenth

=	=	Line Integral	Examples	5	Nineteenth
=	=	Green's theorem	Statement and examples	5	Twentieth
=	=	Surface Area	examples	5	Twenty First
=	=	Surface Integrals	examples	5	Twenty Second
=	=	The Divergence Theorem	Statement and examples	5	Twenty Third
=	=	Stokes Theorem	Statement and examples	5	Twenty Fourth
=	=	Polar coordinates system	The relation between Cartesian and polar systems	5	Twenty Fifth
=	=	Graphs in polar coordinates	Cardioid, Limacon, circle, Rose curve, spiral	5	Twenty Sixth
=	=	Conic sections in the polar system	Examples	5	Twenty Seventh
=	=	Area in the polar coordinates	Area inside curves, Surface area	5	Twenty Eighth
=	=	Length of curves	Asymptotic line in the polar system	5	Twenty Ninth
=	=	Conic sections	Circle, parabola, ellipse	5	Thirtieth
=	=	Exams			Thirty First

Textbooks	Calculus and analytic Thomas' Calculus 14th Edition geometry (Thomas)2018
References	Calculus (Anton, Bivens,Davis) Thomas' Calculus 14th Edition
Recommended books and references (scientific journals, reports, etc.)	The most important books and resources on advanced calculus are available in the Central Library and the Department Library
Electronic references, websites,.....	<ul style="list-style-type: none"> Reliable websites. Virtual library. Library websites at some international universities. Any reliable website specializing in the study of differential and integral calculus.

Course development plan

- Regularly reviewing the latest books and research on advanced calculus and incorporating them into the curriculum.
- Adding new topics from current sources and attempting to expand the curriculum, and linking them to actual applied calculus topics to enable students to benefit fully from the curriculum.

Course description

Course description:

This course description provides a concise summary of the main course features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Ordinary Differential Equations
4. Lectures	In-person attendance
5. Year	2024-2025
6. Study hours	4 hrs.
7. Date	3-1-2025
Course Objective	
Teaching students the basic concepts of ordinary differential equations.	
Teaching students methods for solving differential equations.	
Teaching students about different types of differential equations and their uses in various applications.	
Course outcomes, teaching, learning and assessment methods	

<p>K. Cognitive objectives</p> <ul style="list-style-type: none"> • A1- Enabling students to understand methods for solving differential equations • A2- Applying laws in theoretical examples • A3- Equations in solving some physical and chemical problems • A4- Understanding their application and importance in real life • A5- Developing their skills in judicial adjudication • A6- Motivating students to create and solve similar equations
<p>L. Course-Specific Skills Objectives</p> <ul style="list-style-type: none"> • B1 - Ease of using the appropriate method for the solution • B2 - A good understanding of its applications
<p>M. Affective and Value-Based Objectives</p> <p>C1- Developing the student's ability to work on completing assignments and submitting them on time.</p> <p>C2- Using logical and mathematical thinking to find solutions to problems.</p> <p>C3- Developing the student's ability to engage in dialogue and discussion.</p>
<p>D - General and transferable skills (other skills related to employability and personal development)</p> <p>D1- Introducing the student to the importance of differential equations.</p> <p>D2- Developing the student's ability to recognize different types of differential equations.</p> <p>D3- Developing the student's ability to engage in scientific discussion.</p> <p>D4- Using mathematical programs.</p>
Teaching and learning methods
Discussion sessions - Using websites - Providing students with practical examples close to our real lives - Giving examples and questions that stimulate the student's thinking
Evaluation methods
Daily tests - surprise exams - scientific report - midterm and final exam

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	Definitions + Theories + Examples	Basics of differential equations	8	1
=	=	First: Differential equations with separable variables Second: Homogeneous differential equations	First-order and first-degree differential equations	8	2
=	=	Third: Differential	First-order and first-	8	3

		equations with linear coefficients	degree differential equations		
=	=	Fourth: The perfect differential equation + Integration factor	First-order and first-degree differential equations	8	4
=	=	Special Cases + Fifth: Linear Differential Equations	First-order and first-degree differential equations	8	5
=	=	Sixth: Bernoulli's differential equation + discussion	First-order and first-degree differential equations	8	6
=	=	Reduce the order of a second-order differential equation	Higher order and first degree differential equations	8	7
=	=	Reduce the order of the third and fourth order differential equation + discussion	Higher order and first degree differential equations	8	8
=	=	The first type: Differential equations solvable in p The second type: Differential equations solvable in y	First-order and higher-order differential equations	8	9
=	=	Case 3: Differential equations solvable in x + Discussion	First-order and higher-order differential equations	8	10
=	=	Definitions + Theorems + Differential Operator with its Properties and Theorems	Homogeneous and non-homogeneous linear differential equations with constant coefficients	8	11
=	=	Characteristic Equation Method + Specific Solution	Homogeneous and non-homogeneous linear differential equations with constant coefficients	8	12

		First Method: Undetermined Coefficients Method First Case: If $g(x)$ is polynomial of degree m.			
=	=	Second Case: If $g(x) = be^{ax}$ + Third Case: if $f(x) = b \sin ax$ Or $f(x) = b \cos ax$	Nonhomogeneous linear differential equations with constant coefficients	8	13
Daily exam	Tests	Discussion	Nonhomogeneous linear differential equations with constant coefficients	8	14
-	-	-	Exams	8	15
-	-	-	Exams	8	16
		Second Case: If $g(x) = be^{ax}$ + Third Case: if $f(x) = b \sin ax$ و $f(x) = b \cos ax$	Nonhomogeneous linear differential equations with constant coefficients	8	17
Daily exam	Tests	Discussion	Nonhomogeneous linear differential equations with constant coefficients	8	18
Discussion	Theoretical	Second method: The method of changing constants + Third method: The method of inverse differential operator First case: If $g(x) = e^{bx}$	Nonhomogeneous linear differential equations with constant coefficients	8	19
=	=	Second Case: If $g(x) = \sin bx$ or $g(x) = \cos bx$ + Third Case: If $g(x)$ is	Nonhomogeneous linear differential equations with constant coefficients	8	20

		polynomial of degree m			
=	=	Fourth Case: If $g(x) = e^{bx} v(x)$ where $v(x) = \sin ax$ or $v(x) = \cos ax$ or $v(x)$ is polynomial	Nonhomogeneous linear differential equations with constant coefficients	8	21
Daily exam	Tests	Discussion	Nonhomogeneous linear differential equations with constant coefficients	8	22
Discussion	Theoretical	Euler's Equation + Exact Linear Differential Equations	Linear differential equations with variable coefficients	8	23
=	=	Definition + Properties of Transformation with Proof + Theorems + Examples	Laplace Transform	8	24
=	=	Inverse Laplace Transform + Applications of the Laplace Transform	Laplace Transform	8	25
=	=	Discussion + Integral Equations	Laplace Transform	8	26
=	=	Solving integral equations + Definitions, theorems, and examples	Laplace Transform + Solving differential equations with series	8	27
=	=	Discussion + Series solution using powers x	Solving differential equations with series	8	28
=	=	Legendre equation + Singular and ordinary points of the differential equation	Solving differential equations with series	8	29
=	=	Solving differential equations near a normal point	Solving differential equations with series	8	30

		+ Solving differential equations near a singular point			
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Textbooks	<p>(1)Khalid Ahmed Al-Samarrai and Yahya Abdul Saeed, "Methods of Solving Differential Equations," Iraqi Ministry of Higher Education and Scientific Research, 1980.</p> <p>(2)Rabenstein, A. L., "Introduction to Ordinary Differential Equations," 1972, New York.</p> <p>(3)Stein, R., "Introduction to Ordinary Differential Equations," 2nd ed., New York, 1972.</p>
References	Khaled Ahmed Al-Samarrai and Yahya Abdul Saeed, "Methods of Solving Differential Equations," Iraqi Ministry of Higher Education and Scientific Research, 1980.
Electronic references, websites,.....	www. freescince.info\math

Course development plan

- Twinning with international universities
- Learn about the latest methods.

Course description form

Course description: This course aims to introduce axiomatic systems and their properties, as well as Euclidean geometry and its evaluation, and non-Euclidean geometry.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Systems of axioms and geometry
4. Lectures	weekly lectures
5. Year	2024-2025
6. Study hours	4 hrs.
7. Date	2-01-2025
Course Objective	
-Axiomatic system - Examples of axiomatic systems - Properties of axiomatic systems – geometry.	
-Euclidean geometry.	
- Evaluation of Euclidean geometry.	
- Non-Euclidean geometry.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives <ul style="list-style-type: none"> axiomatic systems and their properties evaluation. Euclidean geometry and non-Euclidean geometry.
B. Course-Specific Skills Objectives <ul style="list-style-type: none"> Thinking and Analysis. Learn the appropriate method of proof.
C. Thinking Skills <ul style="list-style-type: none"> Questions during the explanation. Hypothetical questions.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> Providing advice and guidance. Understanding problems and trying to solve them.
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> Boosting self-confidence. Moral support.
Teaching and learning methods
<ul style="list-style-type: none"> Read and explain the topic Analyze the topic and give examples.
Evaluation methods
<ul style="list-style-type: none"> Daily Activities Quick Quizzes Midterm and Final Exams

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	The Axiomatic System and the Projective Plane		4	1
		The Finite Projective Plane			2
		The Combinational Plane			3
		The Finite Combinational Plane			4
		Fanou System			5

	Jung's System	6
	Consistency	7
	Independence	8
	Completion	9
	Euclidean Geometry	10
	Euclidean Geometry	11
	Evaluation of Euclidean Geometry	12
	Evaluation of Euclidean Geometry	13
	Partitioning	14
	Exams	15
	Exams	16
	Bach's Axiom	17
	Convex Set	18
	Theorems	19
	Ray	20
	Theorems	21
	Inside and Outside Triangles	22
	Theorems	23
	Theorems	24
	Angles	25
	Convex Quadrilateral	26
	Congruence and Comparison of Segments	27
	Congruence and Comparison of Angles	28
	Comparison of Angles	29
	Right and Non-Right Angles	30
	Non-Euclidean Geometry	31

Textbooks	Basic Concepts in Engineering Authored by: Dr. Amal Shihab Al-Mukhtar
References	Basic Concepts in Engineering Authored by: Dr. Amal Shihab Al-Mukhtar
Recommended books and references (scientific journals, reports, etc.)	Other academically reliable textbooks in The Axiomatic System

Electronic references, websites,.....	Online resources and scientific websites
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Course development plan
<ul style="list-style-type: none"> • Discuss some related concepts. • Prepare reports on the topics.

Course description form

<p>Course description: It is an algebraic structure consisting of a set of elements and a binary operation that satisfies certain properties. It differs from the fundamental group in that it deals with binary operations that include second-order outputs, which extends its scope to include operations such as matrix multiplication or function combinations. It is used in fields such as the study of symmetries and patterns of variation.</p>

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Group Theory
4. Lectures	Official working hours , weekly lectures.
5. Year	2024-2025
6. Study hours	4 hrs.
7. Date	2024/12/11
Course Objective	
Teaching the student the basic concepts of group theory in algebra.	
Teaching the student to know the group, the conditions of the group, and its properties.	

Teaching students about the types of groups and how to use them in various applications.
Using groups to solve some physical and engineering problems.
Develop their skills in their scientific and practical knowledge.

Course outcomes, teaching, learning and assessment methods
A. Cognitive objectives <ul style="list-style-type: none"> • Enabling the student to know the properties of the group and the semi-group. • Applying laws in real-life examples. • Knowing its application and importance in real life. • Motivating the student to create and solve examples.
B. Course-Specific Skills Objectives <ul style="list-style-type: none"> • Ease of use of the appropriate method to distinguish the group. • Understand its applications well.
C. Thinking Skills <ul style="list-style-type: none"> • Use mathematics programs. • Develop his ability to engage in scientific discussion. • Applying laws in real-life models.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> • Developing the student's ability to work on completing assignments and submitting them on time. • Logical and mathematical thinking in finding solutions to problems. • Developing the student's ability to dialogue and discuss.
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> • Introducing the student to the importance of groups. • Develop his ability to engage in scientific discussion.
Teaching and learning methods
<ul style="list-style-type: none"> • Discussion sessions - Providing students with practical examples close to our real lives. • Using websites. • Giving examples and questions that stimulate the student's thinking.
Evaluation methods

- Daily tests.
- Pop-up exams.
- Scientific reports.
- Midterm and final exams.

Course Outline

Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	Definitions, Theorems, Examples.	Semigroup, Math. System	8	1
=	=	1. Definition, 2. Examples.	Equivalent Classes	=	2
=	=	1. S_n -group. 2. \mathbb{Z}_n -group.	Definition and conditions of group and its examples	=	3
=	=	Integers, real, and matrices groups.	Some important groups	=	4
=	=	Definition, equivalents, examples	Subgroups	=	5
=	=	Finite subgroups, infinite subgroups	Properties of subgroups	=	6
=	=	Properties	Cosets to subgroups	=	7
=	=	Definitions, Theorems, Examples.	Normal subgroups	=	8
=	=	Specifications check or not check	Properties of normal subgroups	=	9
=	=	1. Definition, and Examples. 2. Theorems.	Cyclic Groups	=	10
=	=	1. Definition, properties. 2. Theorems.	Factor Groups	=	11
=	=	Applications of Lagrange's Theorem	Index of subgroup, Lagrange theorem	=	12
=	=	Case 1. finite group, case 2. Infinite, case 3. Generators	Order of subgroups, Generator of subgroups	=	13
Daily testing	Tests	Discussion	The relation between group, factor group	=	14
			Examinations	=	15
			Examinations	=	16
Discussion	Theoretical	Case 1. If $f: G \rightarrow G$ homo., Case2.If $f: G \rightarrow G$ not homo	Homomorphism of Groups	=	17
Daily testing	Tests	Discussion	Properties of group homomorphism	=	18
Discussion	Theoretical	Case (1): $F: \mathbb{Z} \rightarrow \mathbb{Z}$ $F(z)=z$. (2): $F: \mathbb{R}^2 \rightarrow \mathbb{R}^2$, $F(a,b)=(a,0)$	Kernel of Homomorphisms	=	19
=	=	First, second and third isomorphism theorems	Isomorphism Theorems	=	20

=	=	$\mathbb{Z} \rightarrow \mathbb{Z}_n$ such that $F: (x)=[x]F$	Applications of first isomorphism theorem	=	21
Daily testing	Tests	Discussions	Another Applications of F. I. theorem	=	22
Discussion	Theoretical	Definition and its properties	Automorphisms Group	=	23
=	=	Definition and its examples	P-groups	=	24
=	=	Applications of first sylow theorem	First sylow theorem	=	25
=	=	examples in product of groups	direct product of groups	=	26
=	=	Ways to find Conjugates	Conjugate subgroups	=	27
=	=	Definition and applications	Composition Chains	=	28
=	=	Definition and applications	Nilpotent groups	=	29
=	=	Examples and the concept of solvable subgroups	Solvable groups	=	30

Textbooks	(1) "Group Theory." Prof. Dr. Adel Ghassan Naoum. College of Science, University of Baghdad, 1983. (2) "Introduction to Modern Abstract Algebra." By David M. Burton, Hampshire University, 1967. Translated by Abdul-Ali Jassim Muhammad and Sana Abdul-Muhammad. Ministry of Higher Education, 1985.
References	"Introduction to Modern Abstract Algebra." By David M. Burton, Hampshire University, 1967. Translated by Abdul-Ali Jassim Muhammad and Sana Abdul-Muhammad. Ministry of Higher Education, 1985.
Recommended books and references (scientific journals, reports, etc.)	We recommend the following scientific journals: 1. Communications in Algebra 2. Journal of Algebra
Electronic references, websites,.....	www.freescience.info/math

Course development plan

- View new papers published in peer-reviewed scientific journals.
- Using linear programming in the curriculum.
- Adding applications to the subject of algebra in algebraic geometry.

Course description

Course description: It is the practical framework that defines how a research problem will be studied, including the data to be collected, the sources of these data, and the methods for analyzing them. A description of the scientific method should include basic methodological steps such as defining the problem and objectives, reviewing the literature, constructing a theoretical framework, and identifying methods for collecting and analyzing data (such as the descriptive or experimental method).

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Scientific Research Methodology
4. Lectures	In-person
5. Year	2024/2025
6. Study hours	2 hrs.
7. Date	2/01/2025
Course Objective	
Prepare their graduation research project.	

Learn how to collect, organize, and classify information.

Understand how to present information and data effectively.

Recognize the importance of scientific research.

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- Understand the importance of research.
- Identify methods of data and information collection.
- Learn techniques of data classification.
- Apply data analysis methods.
- Utilize collected data effectively for research

B. Course-Specific Skills Objectives

- Understand the importance of research.
- Identify methods of data and information collection.
- Learn techniques of data classification.
- Apply data analysis methods.
- Utilize collected data effectively for research.

C. Thinking Skills

- Prepare structured research papers.
- Use global internet resources for research.
- Classify data in tabular formats.
- Present data using charts, graphs, and diagrams.

D. Affective and Value-Based Objectives

- Develop readiness to prepare the graduation project.
- Enhance critical and independent thinking.
- Cultivate teamwork in research preparation

E. General and transferable skills (other skills related to employability and personal development).

- Utilize computers and digital software.
- Strengthen analytical and organizational abilities.

Teaching and learning methods

Teaching Methods:

- Lectures, discussions, and guided reviews of pre-prepared research papers.

Assessment Methods:

- Daily exams.
- Monthly quizzes.
- Mini-research projects conducted in groups.

Evaluation methods

Course Outline

Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
In-class Questions	Lecture & Explanation	Concept of Scientific Research	Concept of Scientific Research	2	1
In-class Questions	Lecture & Explanation	Knowledge and Emergence of Scientific Research	Knowledge and Emergence of Scientific Research	2	2
In-class Questions	Lecture & Explanation	Science	Science	2	3
In-class Questions	Lecture & Explanation	Research Problem and Purpose of Selection	Research Problem and Purpose of Selection	2	4
In-class Questions	Lecture & Explanation	Steps of Scientific Research	Steps of Scientific Research	2	5
In-class Questions	Lecture & Explanation	Research Objectives	Research Objectives	2	6
In-class Questions	Lecture & Explanation	Formulating the Research Title	Formulating the Research Title	2	7
In-class Questions	Lecture & Explanation	Researcher's Qualities	Researcher's Qualities	2	8
In-class Questions	Lecture & Explanation	Scientific Hypotheses	Scientific Hypotheses	2	9
In-class Questions	Lecture & Explanation	Research Questions and How to Formulate Them	Research Questions and How to Formulate Them	2	10
In-class Questions	Lecture & Explanation	Research Methodologies	Research Methodologies	2	11
In-class Questions	Lecture & Explanation	Types of Research Formulation	Types of Research Formulation	2	12
In-class Questions	Lecture & Explanation	Collecting Information and Data	Collecting Information and Data	2	13
In-class Questions	Lecture & Explanation	Data Collection Tools	Data Collection Tools	2	14
In-class Questions	Lecture & Explanation	Exams	Exams	2	15
In-class Questions	Lecture & Explanation	Exams	Exams	2	16
In-class Questions	Lecture & Explanation	Steps for Preparing Conclusions	Steps for Preparing Conclusions	2	17
In-class Questions	Lecture & Explanation	Interview and Observation	Interview and Observation	2	18
		Tests	Tests	2	19
In-class Questions	Lecture & Explanation	Statistical Inference	Statistical Inference	2	20
In-class Questions	Lecture & Explanation	Samples	Samples	2	21

In-class Questions	Lecture & Explanation	Preparing the Research Plan	Preparing the Research Plan	2	22
In-class Questions	Lecture & Explanation	Elements of the Research Plan	Elements of the Research Plan	2	23
In-class Questions	Lecture & Explanation	Research Stages	Research Stages	2	24
In-class Questions	Lecture & Explanation	Types of Research Stages	Types of Research Stages	2	25
In-class Questions	Lecture & Explanation	Characteristics of Research	Characteristics of Research	2	26
In-class Questions	Lecture & Explanation	Classification, Collection, and Presentation of Data	Classification, Collection, and Presentation of Data	2	27
In-class Questions	Lecture & Explanation	Simple Tables	Simple Tables	2	28
In-class Questions	Lecture & Explanation	Bar Charts	Bar Charts	2	29
In-class Questions	Lecture & Explanation	Exams	Exams	2	30

References	<ul style="list-style-type: none"> - Prescribed textbooks for the Research Methodology course. - Main references and sources: scientific journals, reports. - Recommended readings.
Recommended books and references (scientific journals, reports, etc.)	
Electronic references, websites,.....	- Online electronic resources and websites.

Course development plan

The course will be continuously updated based on modern research methodologies and academic requirements.

Course description form

Course description: The student's knowledge of the crimes against humanity committed by the previous regime against Iraqis. Protecting the student from any activities supportive of the fallen Ba'ath Party.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Crimes of the Baath regime in Iraq
4. Lectures	In person
5. Year	2025-2024
6. Study hours	1 hr.
7. Date	2-1-2025
Course Objective	
Introducing the student to the crimes and violations of the dissolved Baath Party.	
Enabling the student to understand the era of political systems in Iraq.	
And to inform the student about the violations and actions of the previous dictatorial regime against the Iraqi people, including the confiscation or restriction of rights and freedoms.	

Course outcomes, teaching, learning and assessment methods

<p>A. Cognitive objectives</p> <ul style="list-style-type: none"> • A statement of the abuses committed by the repressive apparatus during the era of the fallen regime, such as the use of banned chemical weapons, displacement, and mass imprisonment against the Iraqi people. • Statement of violations of rights and freedoms by the defunct Baath regime.
<p>B. Course-Specific Skills Objectives</p> <ul style="list-style-type: none"> • The student's knowledge of the crimes against humanity committed by the former regime against Iraqis. • Students note the violations and deprivation of rights and freedoms practiced by the previous regime.
<p>C. Thinking Skills</p> <ul style="list-style-type: none"> • For dialogue and discussion, and to reinforce it with evidence and events that the Iraqi people have experienced from the crimes committed by the fallen regime.
<p>D. Affective and Value-Based Objectives</p> <ul style="list-style-type: none"> • Reminding students of the harsh reality that the Iraqi people lived due to the policies of the former regime and the violation of laws and international agreements that affirm rights and freedoms, including the Universal Declaration of Human Rights.
<p>E. General and transferable skills (other skills related to employability and personal development).</p> <ul style="list-style-type: none"> • The dialogue and discussion, reinforced by the evidence and events that the Iraqi people have experienced due to the crimes committed by the fallen regime.
Teaching and learning methods
<ul style="list-style-type: none"> • The dialogue and discussion.
Evaluation methods
<ul style="list-style-type: none"> • Guiding questions and midterm and final exams.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	Crimes of the Baath regime	The concept of crimes	1 1 1	1 2 3
Discussion	Theoretical	The decisions issued by the Iraqi Criminal Court against the crimes of the dissolved Ba'ath Party committed against the Iraqi people.	. Violations of Iraqi laws by the criminals of the Ba'ath regime.	1 1 1 1	4 5 6 7
		Crimes of the Ba'ath regime according to the	Types of international crimes	1 1	6 7

		documentation of the Iraqi High Criminal Court.			
Discussion	Theoretical	Psychological and social crimes	The effects of the crimes committed by the fallen regime	1 1 1	8 9 10
Discussion	Theoretical	The environmental crimes of the Baath regime in Iraq	The environmental issues that Iraq faced due to the repressive Ba'ath regime.	1 1 1	11 12 13 14
Discussion	Theoretical	Mass grave crimes	The genocidal crimes committed by the Baathi regime against the people of Iraq.	1 1 1 1	15 16 17 18

Textbooks	The methodology of the Ba'ath regime crimes in Iraq.
References	Crimes of the fallen Ba'ath Party
Recommended books and references (scientific journals, reports, etc.)	Reports from the United Nations, humanitarian organizations, and non-governmental organizations that issued reports on human rights violations and crimes by the defunct Ba'ath Party against the Iraqi people.
Electronic references, websites,.....	Ar.m.wikipedia.org

Course development plan

- We recommend adding to the curriculum a description of the political systems that ruled Iraq (1921-2003).

Course description

Course Description : This course description provides a concise summary of the most important characteristics of the course and the expected learning outcomes the student is expected to achieve, demonstrating whether they have made the most of the available learning opportunities. It must be linked to the program description.

1. Educational Institution	College of Education for Pure Sciences, University of Thi-Qar
2. Scientific Department / Center	Department of Mathematics
3. Course Name / Code	English Language
4. Available Attendance Modes	Morning / Second Stage
5. Semester / Academic Year	First Semester / Academic Year 2024-2025
6. Total Study Hours	14 Hours
7. Date of This Description	20/12/2024
1- Course Objectives	
A- Mastering reading skills.	
B- Mastering writing skills.	
C- Mastering listening skills.	

D- Mastering speaking skills.

1- Course Outcomes, Teaching and Learning Methods, and Assessment

A. Cognitive Objectives

- A1.** Knowledge of the English language and its use in a modern, scientific way based more on practical means than theory.
- A2.** Knowledge of English language culture; understanding the culture of a language facilitates the learning process.
- A3.** Developing the student's cognitive and perceptual skills in learning a second language alongside their native language.
- A4.** Learning a second language helps in understanding another society, building relationships with them, and learning about their civilization and culture.

B. Course-Specific Skill Objectives

- B1.** Developing reading skills, understanding main ideas, and comprehending meaning fully and in detail.
- B2.** Developing writing skills, specifically writing essays and constructing grammatically and semantically correct sentences.
- B3.** Developing listening skills, understanding spoken phrases and terms, and learning how to respond.
- B4.** Developing speaking and response skills when conversing, and speaking about ideas clearly.

Teaching and Learning Methods

The method involves delivering detailed theoretical lectures on topics, including examples and exercises. Following this, topics are applied in useful sentences, conversations, essay writing, and listening to videos and clips in English during listening skill practice. Encouraging dialogue discussions between the professor and student, organizing discussion circles among students, and focusing more on practical aspects than theoretical ones.

Assessment Methods

Assessment is conducted through theoretical exercises to test the student's understanding of topics, weekly quizzes, in addition to monthly, mid-term, and final exams according to the course plan.

C. Affective and Value Objectives

- C1.** Fostering student engagement in learning course vocabulary to master the language and speak it.
- C2.** Cultivating a passion for understanding the civilization and culture of English-speaking peoples and communicating with them.
- C3.** Encouraging active student participation in class by asking questions and showing a love for learning.
- C4.** Enabling the ability to express new concepts and search for other sources like books and electronic websites to learn English.

D. General and Transferable Skills (Other skills related to employability and personal development)

- D1.** Acquiring language skills and using these skills in communication and conversation.
- D2.** The potential to further develop language skills in the future.
- D3.** Mastering English is now a requirement in societies worldwide; knowing another language helps in obtaining jobs in companies and service institutions.
- D4.** Developing language skills helps the student continue their studies in their field of specialization.

1- Course structure					
Week	Hour	Unit / Topic Name	Required Learning Outcomes	Teaching method	Assessment method
1	1hr	Comparative and superlative degrees form(one syllable = long-longer- longest, (two syllable = beautiful-more beautiful –most beautiful)	Learning degrees of comparison and preference.	Theoretical Lecture	Daily exams after the explanation period. The exam can be a written exercise or various oral questions, in addition to a quiz every two weeks.
2	1 hr	Teach students the basic components of writing a paragraph, topic sentence, the supporting details and concluding sentence	Learning to write an essay paragraph and its parts: topic sentence, details, and concluding sentence.	Theoretical Lecture	<i>Same as above</i>
3	1 hr	Simple sentence/ compound sentence / complex sentence: <ul style="list-style-type: none"> • He is a student. • I want to buy a new car, but I don't have enough money. • The man who sit there is my friend. 	Learning to identify and write simple, compound, and complex sentences.	Theoretical Lecture	<i>Same as above</i>
4	1 hr	The instructor will give students a title to write a	Learning to write	Theoretical	<i>Same as</i>

		paragraph. The paragraph should contain the three basic components.	an essay paragraph using simple, compound, and complex sentences.	Lecture	<i>above</i>
5	1 hr	Adjectives followed by <i>to infinitive</i> : sorry to happy to able to important to difficult to nice to	Learning to use adjectives followed by the <i>to-infinitive</i> .	Theoretical Lecture	<i>Same as above</i>
6	1 hr	In speaking, student will study some idioms and expression like <i>I was wonder if I ask? , would you mind? , Can you help me? Please</i> , we will use these expressions in a conversation or	Learning to use idiomatic and interrogative expressions within an oral dialogue.	Theoretical Lecture	<i>Same as above</i>
7	1 hr	Teach students the basic usages of wh-word(who, why, how much, how many and why)	Learning to use interrogative tools (question words).	Theoretical Lecture	<i>Same as above</i>
8	1 hr	Singular and plural noun forms	Learning singular and plural forms.	Theoretical Lecture	<i>Same as above</i>
9	1 hr	Teach students using yes, no question (Do you have a question - Yes, I do - No, I don't	Learning to use question and short answer forms.	Theoretical Lecture	<i>Same as above</i>
10	1 hr	Teach students the difference between the wh-word question (what did you do yesterday?) and yes, no question (Are you tired).	Learning the difference between questions starting with an auxiliary verb and those starting with an interrogative word.	Theoretical Lecture	<i>Same as above</i>
11	1 hr	Teach students some basic principles for writing a paragraph (unity and	Learning the features of correct	Theoretical Lecture	<i>Same as above</i>

		coherence). Use good transition words to connect sentences together and all sentence should express about details or thoughts that related with the paragraph title or subject.	essay paragraph writing, including unity of ideas and coherence in sentence sequence.		
12	1 hr	In the listening activity, teacher will give students a video clip taking about the pollution. Students need to understand what video talks about. After that, instructor will give students homework about the video clip.	Learning listening skills.	Theoretical Lecture	<i>Same as above</i>
13	1 hr	Select slang idioms in a dialogue and define each idiom. Breeze, learn ropes, work one's fingers to the bone and cut out)	Learning to understand colloquial terms during speech.	Theoretical Lecture	<i>Same as above</i>
14	1 hr	Quick review for all previous lessons	Comprehensive course review before the final exam period.	Theoretical Lecture	
15	3 hrs	Final Exam	Final semester exam.		

2. Infrastructure	
1- Required Textbooks	<i>New Headway Intermediate Student's Book</i> by Liz & John Soars.
2- Main References (Sources)	New headway English course: pre intermediate by Liz & John Soars. Listening & Speaking by Sally Logan and Craig Thaine.
1- Recommended Books and References (Scientific journals, reports, etc.)	Any book or magazine related to developing English language skills.
2- Electronic References, Internet Sites, etc.	Various specialized websites for learning English, for example, the British Council website.

3- Course Development Plan

Focusing on external resources related to learning English based on modern and solid scientific foundations. Emphasizing recently authored books based on modern theories, research, and analysis. Focusing on the content of language proficiency tests (TOEFL, IELTS, and SAT) to realistically and authentically test English language mastery skills.

Course description form

Course description: It focuses on developing students' skills in planning, organizing, and leadership, problem analysis and decision-making, understanding the principles of human and financial resource management, and providing innovative solutions to contemporary challenges in the public and private sectors.

9. Affiliation	University of Thi-Qar/ College of Education for Pure Science
10. Department	Mathematics
11. Subject	Educational Administration and secondary education
12. Lectures	In person
13. Year	2024/2025
14. Study hours	30 hours (2 hours per week)
15. Date	5/1/2025
Course Objective	
1) Developing the educational process. 2) Preparing a generation capable of adapting to changes in educational and pedagogical institutions. 3) Identifying the factors that influence classroom management and the psychological and social foundations. 4) Understanding the relationship between educational supervision and certain management processes.	

5) Understanding the tasks and functions of educational supervision.

Course outcomes, teaching, learning and assessment methods

F. Cognitive objectives

- Enabling the student to understand the concept of management
- Increase the student's knowledge of the concept of classroom management
- Develop intellectual abilities and skills in classroom management styles
- Develop the student's ability to expand his or her ideas by linking the relationships between educational supervision and certain management processes

G. Course-Specific Skills Objectives

- The ability to organize classroom interaction.
- Create a core of knowledge for future application of what has been studied.
- Upon completion of this study, the student will be able to apply their knowledge in areas important to classroom management.
- The student's ability to practice classroom discipline.

H. Thinking Skills

I. Affective and Value-Based Objectives

- The student's voluntary, not forced, commitment to studying the course content.
- Increasing his passion for learning the many concepts in this course.
- Demonstrating his activity in the science section by presenting his acquired ideas about this course.
- Fostering a spirit of cooperation among students in completing scientific reports or contributions.

J. General and transferable skills (other skills related to employability and personal development).

- The student acquires the skill to understand the concepts of this vocabulary.
- The student is prepared to acquire advanced skills related to these concepts in the future.
- After honing the students' skills, they will be able to develop themselves further in their studies.
- At a high level, the skill can be developed in the future, enabling them to apply it to other sciences.

Teaching and learning methods

The learning method is based on lectures and theoretical discussions, in addition to sometimes asking interesting questions about the topic that motivate the student to gain information with desire and understanding.

Evaluation methods

Daily exams and sometimes we ask random questions during the lecture to evaluate the students

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
exam	Lecture / Q&A	Educational Administration - Its Concept	Understanding Educational Administration - Its Concept	2	1

=	Lecture / Q&A	The Importance of Educational Administration	Understanding the Importance of Educational Administration	=	2
=	Lecture / Q&A	Characteristics of Contemporary Educational Administration	Understanding the Characteristics of Contemporary Educational Administration	=	3
=	Lecture / Q&A	Factors Influencing Educational Administration	Distinguishing the factors influencing educational administration	=	4
=	Lecture / Q&A	Prevailing Trends in Educational Administration	Evaluating prevailing trends in educational administration	=	5
=	Lecture / Q&A	Factors Dependent on the Use of Either Method	Understanding the factors that determine the use of either approach	=	6
=	Lecture / Q&A	The Concept of Centralization and Decentralization	Understanding the concepts of centralization and decentralization	=	7
=	Lecture / Q&A	Reasons for the Use of Centralization and Decentralization	Analyzing the reasons for using centralization and decentralization	=	8
=	Lecture / Q&A	Goals of Implementing Administrative Decentralization in Education	Evaluating the objectives sought by implementing decentralization in education	=	9
=	Lecture / Q&A	Benefits, Pros, Cons, and Disadvantages of Centralization	Analysis of the benefits, advantages, disadvantages, and downsides of centralization	=	10
=	Lecture / Q&A	The benefits, advantages, disadvantages, and downsides of decentralization Administrative skills	Analysis of the benefits, advantages, disadvantages, and downsides of decentralization	=	11
=	Lecture / Activities	required for educational administrators	Distinguishing the administrative skills required for educational administrators	=	12
=	Lecture / Q&A	Preparation requirements for educational administrators	Identify the requirements for preparing an educational	=	13

			administrator.		
=	Lecture / Q&A	How to select school principals	Evaluate how to select school principals.	=	14
		First semester exam		=	15

Textbooks	Guidance and Mental Health / Dr. Hassan Al-Sayyid, Dr. Sahib Marzouk
References	Guidance and Mental Health / Dr. Hassan Al-Sayyid, Dr. Sahib Marzouk Mental Health and Psychotherapy / Dr. Hamed Abdel-Salam Zahran
Recommended books and references (scientific journals, reports, etc.)	Recommended Journals: Journal of Psychological Counseling
Electronic references, websites,.....	Psychology Academy, Wikipedia, Arab Encyclopedia of Counseling and Psychotherapy, Psychological Counseling Center – Cairo University, Arab Network of Psychological Sciences, Educational Studies and Psychological Research Centers.

Course development plan

Extend practical training periods in schools.
Expose students to the latest developments in guidance and mental health.
Encourage knowledge exchange among faculty members.
Keep pace with professional developments in guidance and counseling.

Course description form

Course description: It focuses on developing students' skills in planning, organizing, and leadership, problem analysis and decision-making, understanding the principles of human and financial resource management, and providing innovative solutions to contemporary challenges in the public and private sectors.

16. Affiliation	University of Thi-Qar/ College of Education for Pure Science
17. Department	Mathematics
18. Subject	Educational Administration and secondary education
19. Lectures	In person
20. Year	2024/2025
21. Study hours	30 hours (2 hours per week) for 1 st course
22. Date	5/1/2025
Course Objective	
1) Developing the educational process. 2) Preparing a generation capable of adapting to changes in educational and pedagogical institutions. 3) Identifying the factors that influence classroom management and the psychological and social foundations. 4) Understanding the relationship between educational supervision and certain management processes. 5) Understanding the tasks and functions of educational supervision.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- Enabling the student to understand the concept of management
- Increase the student's knowledge of the concept of classroom management
- Develop intellectual abilities and skills in classroom management styles
- Develop the student's ability to expand his or her ideas by linking the relationships between educational supervision and certain management processes

B. Course-Specific Skills Objectives

- The ability to organize classroom interaction.
- Create a core of knowledge for future application of what has been studied.
- Upon completion of this study, the student will be able to apply their knowledge in areas important to classroom management.
- The student's ability to practice classroom discipline.

C. Thinking Skills

D. Affective and Value-Based Objectives

- The student's voluntary, not forced, commitment to studying the course content.
- Increasing his passion for learning the many concepts in this course.
- Demonstrating his activity in the science section by presenting his acquired ideas about this course.
- Fostering a spirit of cooperation among students in completing scientific reports or contributions.

E. General and transferable skills (other skills related to employability and personal development).

- The student acquires the skill to understand the concepts of this vocabulary.
- The student is prepared to acquire advanced skills related to these concepts in the future.
- After honing the students' skills, they will be able to develop themselves further in their studies.
- At a high level, the skill can be developed in the future, enabling them to apply it to other sciences.

Teaching and learning methods

The learning method is based on lectures and theoretical discussions, in addition to sometimes asking interesting questions about the topic that motivate the student to gain information with desire and understanding.

Evaluation methods

Daily exams and sometimes we ask random questions during the lecture to evaluate the students

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
exam	Lecture / Q&A	Educational Administration - Its Concept	Understanding Educational Administration - Its Concept	2	1
=	Lecture / Q&A	The Importance of Educational Administration	Understanding the Importance of Educational	=	2

			Administration		
=	Lecture / Q&A	Characteristics of Contemporary Educational Administration	Understanding the Characteristics of Contemporary Educational Administration	=	3
=	Lecture / Q&A	Factors Influencing Educational Administration	Distinguishing the factors influencing educational administration	=	4
=	Lecture / Q&A	Prevailing Trends in Educational Administration	Evaluating prevailing trends in educational administration	=	5
=	Lecture / Q&A	Factors Dependent on the Use of Either Method	Understanding the factors that determine the use of either approach	=	6
=	Lecture / Q&A	The Concept of Centralization and Decentralization	Understanding the concepts of centralization and decentralization	=	7
=	Lecture / Q&A	Reasons for the Use of Centralization and Decentralization	Analyzing the reasons for using centralization and decentralization	=	8
=	Lecture / Q&A	Goals of Implementing Administrative Decentralization in Education	Evaluating the objectives sought by implementing decentralization in education	=	9
=	Lecture / Q&A	Benefits, Pros, Cons, and Disadvantages of Centralization	Analysis of the benefits, advantages, disadvantages, and downsides of centralization	=	10
=	Lecture / Q&A	The benefits, advantages, disadvantages, and downsides of decentralization Administrative skills	Analysis of the benefits, advantages, disadvantages, and downsides of decentralization	=	11
=	Lecture / Activities	required for educational administrators	Distinguishing the administrative skills required for educational administrators	=	12
=	Lecture / Q&A	Preparation requirements for educational administrators	Identify the requirements for preparing an educational administrator.	=	13
=	Lecture / Q&A	How to select school principals	Evaluate how to select school	=	14

			principals.		
		First semester exam		=	15

Textbooks	Educational administration
References	Modern Educational and Teaching Administration
Recommended books and references (scientific journals, reports, etc.)	<ul style="list-style-type: none"> Any book, research, or magazine that focuses on secondary education and teaching administration?
Electronic references, websites,.....	<ul style="list-style-type: none"> Any reliable website that focuses on modern educational and teaching administration

Course development plan

Approval of field visits to educational institutions that adopt contemporary trends in educational supervision.

3rd stage

Course description

Course description: This course description provides a concise summary of the main course features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description.

8. Affiliation	University of Thi-Qar/ College of Education for Pure Science
9. Department	Mathematics
10. Subject	Mathematical analysis
11. Lectures	(4 hours weekly)
12. Year	2024-2025
13. Study hours	Total 120 hrs.
14. Date	5-1-2025
Course Objective	
Teaching students the basic concepts of mathematical analysis.	
Teaching students real numbers, upper and lower bounds of sums, metric spaces, sequences, derivatives, integration, and other basic mathematical analysis topics.	
Teaching students about metric spaces and their uses in applications of closure, boundary regions, and interior points.	

Course outcomes, teaching, learning and assessment methods

<p>F. Cognitive Objectives</p> <ul style="list-style-type: none"> • Enabling the student to understand proof using mathematical logic. • Applying the laws to real-life examples. • Connecting mathematical topics based on the principles of the foundations of mathematics. • Understanding its application and importance in real life. • Developing their skills in scientific and practical knowledge. • Motivating the student to create and solve examples.
<p>G. Course-Specific Skills Objectives</p> <ul style="list-style-type: none"> • Logical and mathematical thinking in finding solutions to problems. • Ease of using the appropriate method for solving problems. • A good understanding of its applications. • Developing students' ability to find the simplest methods for proof.
<p>H. Thinking Skills</p> <p>Discussion sessions in which we explain the lecture in a simplified style and with illustrative diagrams, reinforced by real-life examples - giving examples and questions that stimulate the student's thinking.</p>
<p>I. Affective and Value-Based Objectives</p> <ul style="list-style-type: none"> • Developing the student's ability to complete assignments and submit them on time. • Logical and mathematical thinking in finding solutions to problems • Developing the student's ability to engage in dialogue and discussion
<p>J. General and transferable skills (other skills related to employability and personal development).</p> <ul style="list-style-type: none"> • Developing the student's ability to use differential and integral calculus to solve problems related to other sciences. • Developing the student's ability to recognize types of functions. • Developing the student's ability to deal with sets and functions. • Developing the student's ability to engage in dialogue and discussion.
<p>Teaching and learning methods</p>
<ul style="list-style-type: none"> • Using data shows and the whiteboard • Discussion questions and an introduction to the topic before we begin writing its theorems and examples.
<p>Evaluation methods</p>
<ul style="list-style-type: none"> • written exam scores. • Student behavior • daily attendance • discussion group participation

Course Outline

Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	Real Numbers	Real and Rational Numbers	8	1
=	=	Real Numbers	Density of Rational and Irrational Numbers	8	2
=	=	Real Numbers	Upper and Lower Bounds of Sums and Absolute Value	8	3
=	=	Sequences	Sequences and Convergence	8	4
=	=	Sequences	Cauchy Sequence and Complete Spaces	8	5
=	=	Sequences	Operations on Sequences	8	6
Discussion	Exams	Sequences	Exercises Solutions	8	7
=	Theoretical	Metric Space	Types of Metric Spaces	8	8
=	=	Metric Space	Open and Closed Spheres in Metric Spaces	8	9
=	=	Metric Space	Topological Spaces	8	10
=	=	Metric Space	Open and Closed Sets, Boundaries, and Assembly Points	8	11
Discussion	=	Metric Space	Exercises Solutions and Additional Theorems on the Above Topic	8	12
=	Exams	Metric Space	Closure and Interior Points	8	13
=	Theoretical	Sequences in Metric Space	Some Operations on Sequences on Metric Spaces	8	14
Discussion	----	---	Exams	8	15
=	----	-----	Exams	8	16
=	Theoretical	Compact Space	Definition of Space with Examples	8	17
=	=	Compact Space	Theorems and Results on Compact Spaces	8	18
=	=	Terminals of Functions	Theorems and Results on Compact Spaces	8	19
=	=	Continuity	Purpose of Functions and Operations on Them	8	20
Discussion	=	Continuity	Examples of	8	21

			Continuity		
Discussion	=	Continuity	Theorems on Continuity	8	22
=	=	Mean Value Theorem	Continuity Relationship to Compact Spaces	8	23
=	=	Derivative	Mean Value Theorem	8	24
=	=	Derivative	Derivatives and Operations on Them	8	25
=	=	Derivative	Local Maximum and Minimum Values	8	26
=	=	Riemann Integral	Roullé's and Mean Value Theorem	8	27
Discussion	=	Riemann Integral	Riemann Integral	8	28
=	=	Riemann Integral	Properties Riemannian Integration	8	29
=	=	Real Numbers	Riemannian Integrable Functions	8	30

Textbooks	1- Adel Ghassan Naoum, "Introduction to Mathematical Analysis," University of Baghdad, Iraq, 1986, First Edition.
References	2- Apostol, T.M., "Mathematical Analysis," 2nd Edition, 1974, London.
Recommended books and references (scientific journals, reports, etc.)	Royden. H. L., "Real Analysis", 1988. - London
Electronic references, websites,.....	1- Ash, R. B., "Real Analysis and Probability,"

Course development plan

- Twinning with international universities and faculty exchange.
- Learn about the latest global methods for delivering information.
- Sending professors abroad to gain experience.

Course description form

Course description: Statistics at the undergraduate level is a scientific discipline that teaches students how to collect, organize, summarize, present, analyze, interpret, and use numerical data to make informed decisions or inferences about a phenomenon. It aims to provide students with the tools and concepts necessary to accurately understand, measure, and determine the relationships between various phenomena, and is often included in disciplines such as management, economics, and the social sciences.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Probability and Statistics
4. Lectures	4 hrs. per week
5. Year	2025-2024
6. Study hours	120 hrs.
7. Date	2/1/2025
Course Objective	
We give to student some definitions about probability and some ideas on advance probability.	
We present the probability density function and cumulative distribution.	
The mathematical expectation, variance and covariance.	
we give the correlation coefficient and functions of random variables. Finally we study the special distribution in discrete and continuous states.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives <ul style="list-style-type: none"> • The student understands the Combinatorial analysis • The student learn and understands the Probability and conditional probability • The student understands Random variables and Pdf,Cdf, joint pdf,conditional pdf • The student understands Mathematical expectation,Covariance and correlation coefficient • The student understands Distribution of function of random variables • The student understands Discrete statistical distribution • The student understands Continuous statistical distribution
B. Course-Specific Skills Objectives <ul style="list-style-type: none"> • Application the probability and statistics on the problems in our population.
C. Thinking Skills <ul style="list-style-type: none"> • Creative thinking • Critical thinking • Thinking on problem • Analytical Thinking
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> • Daily exam • Monthly exam • Semester exam
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> • The skills in application strategies in our practical reality. • The skills in application scientific methods to solve problems. • The skills in training and development.
Teaching and learning methods
<ul style="list-style-type: none"> • We using the lecture as learning method ,also, we through lecture, we ask the students.
Evaluation methods
<ul style="list-style-type: none"> • We evaluated by depend on some exams and some homeworks.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Daily exam	Lecture	Combinatorial analysis		4	1
Daily exam	Lecture	Combinatorial analysis		4	2
Same	Same	Same		4	3
Same	Same	Random sample		4	4
Same	Same	Random experments		4	5

Same	Same	Random variables		4	6
Same	Same	Probability		4	7
Same	Same	Conditional probability		4	8
Same	Same	Total probability		4	9
Monthely exam	Same	Introduction to advance probability		4	10
Daily exam	Same	Probability density function		4	11
Same	Same	Distribution function		4	12
Same	Same	Joint pdf		4	13
Same	Same	Conditional pdf		4	14
Semester exam	Same	Marginal pdf		4	15
Daily exam	Same	Mathematical expectation		4	16
Same	Same	.Joint math.exp		4	17
Same	Same	.Conditional math. Exp		4	18
Same	Same	Covariance and correlation coeffecient		4	19
Same	Same	Distribution of Function of random variables		4	20
Same	Same	The moment generating function		4	21
Same	Same	Discrete statistical distributions		4	22
Same	Same	Same		4	23
Monthely exam	Same	Same		4	24
Daily exam	Same	Continuous statistical distributions		4	25
Same	Same	Same		4	26
Same	Same	Same		4	27
Same	Same	Same		4	28
Same	Same	Relation between the statistical distributions		4	29
Semestet exam	Same	Same		4	30

Textbooks	Introduction to mathematical statistics Probability theory
References	
Recommended books and references (scientific journals, reports, etc.)	
Electronic references, websites,.....	

Course development plan

- We must development the probability theory .

- We must add stochastic processes.

Course description form

Course description: This course description provides a concise summary of the main course features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Ring Theory
4. Lectures	(Morning and evening) study
5. Year	2024-2025
6. Study hours	4 hrs. weekly
7. Date	11/12/2024
Course Objective	
Teaching the student the basic concepts of ring algebra.	
Teaching the student how to use the algebraic construction in groups to build another mathematical system, which is the algebra of rings.	
Teaching students how to deal with mathematical concepts and use them in various applications.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- Enabling the student to know the benefit of the sons of algebra.
- Applying the laws in real-life examples and making use of algebraic construction in set theory and group theory.

B. Course-Specific Skills Objectives <ul style="list-style-type: none"> Ease of use of the appropriate method for the solution. Developing scientific and cognitive skills.
C. Thinking Skills <ul style="list-style-type: none"> Understand the applications of algebra well. Using theorems in the solution.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> Know how to apply algebraic concepts to solve real-life problems. Developing the student's ability to engage in scientific discussion.
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> Introducing the student to the importance of algebra, especially ring algebra. Developing the student's ability to recognize the types of ideals and the relationship between them.
Teaching and learning methods <ul style="list-style-type: none"> Discussion sessions - Using websites - Providing students with practical examples close to our real lives - Providing examples and questions that stimulate the student's thinking.
Evaluation methods <ul style="list-style-type: none"> Daily tests - surprise exams - science report - final semester exam. Using an electronic screen and whiteboard. Thoughtful questions. Evaluating participation with grades.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	Rings – Definition		4	1
Discussion	Theoretical	Basic properties		=	2
Discussion	Theoretical	Boolean rings		=	3
Discussion	Theoretical	Zero divisors of a rings		=	4
Discussion	Theoretical	Rings – Definition		=	5
Discussion	Theoretical	Cancellation laws in a ring		=	6
Discussion	Theoretical	Some special types of rings		4	7
Discussion	Theoretical	Integral domain		4	8
Discussion	Theoretical	Divisor of zero		=	9
Discussion	Theoretical	Fields		=	10

Discussion	Theoretical	Idempotent and Nil potent element of a ring		=	11
Discussion	Theoretical	The Characteristic of a ring		=	12
Discussion	Theoretical	Subrings		=	13
Discussion	Theoretical	Ideals		4	14
Discussion	Theoretical	Quotient rings		=	15
Discussion	Theoretical	Cancellation laws in a ring		4	16
Discussion	Theoretical	Some special types of rings		=	17
Discussion	Theoretical	Integral domain		=	18
Discussion	Theoretical	Divisor of zero		=	19
Discussion	Theoretical	Definitions of homomorphism		=	20
		Fundamental theorem			
Discussion	Theoretical	Radical ideal		=	21
		Maximal Ideals			
		Prime ideals			
Discussion	Theoretical	Nil and minimum ideals		4	22
		Primary ideal			
		Local and principal id			
Discussion	Theoretical	Rings of polynomials		=	23
Discussion	Theoretical	The division algorithm for polynomials		=	24
Discussion	Theoretical	Remainder and factorization theorems		=	25
Discussion	Theoretical	The Euclidean ring		=	28
Discussion	Theoretical	Irreducible polynomials		=	29
, daily exam, discussion	Theoretical tests	Exam			30

Textbooks	D A V I D M. BUR TON, University of New Hampshire INTRO-DUCTION TO MOO'ERN ABSTRACT ALGEBRA ADDISON-WESLEY PUBLISHING COMPANY.
References	
Recommended books and references (scientific journals, reports, etc.)	
Electronic references, websites,.....	

Course development plan

- Twinning with international universities
- and learning about the latest methods.

Course description form

Course description: This course provides an overview of various numerical methods studied from an analytical and applied perspective. It compares numerical and non-numerical approaches in terms of accuracy.

8. Affiliation	University of Thi-Qar/ College of Education for Pure Science
9. Department	Mathematics
10. Subject	Numerical Analysis
11. Lectures	In persone
12. Year	2024-2025
13. Study hours	4 hrs.
14. Date	14-02-2024
Course Objective	
- Apply numerical methods to solve complex problems that cannot be solved analytically.	
- Analyze and compare different numerical methods.	
- Employ MATLAB software to obtain numerical solutions.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- Understand numerical methods for solving nonlinear equations
- Apply numerical analysis in definite integrals.
- Use numerical methods to evaluate definite integrals.
- Solve linear systems using matrix theory.
- Understand basic concepts of numerical programming in MATLAB.
- Use MATLAB to achieve numerical solutions.

B. Course-Specific Skills Objectives <ul style="list-style-type: none"> • Graduation projects. • Scientific reports. • Scientific activities.
C. Thinking Skills <ul style="list-style-type: none"> • Graduation projects • Scientific reports • Scientific activities
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> • Develop the ability to perform tasks and submit them on time • Enhance scientific thinking. • Develop the ability to participate effectively in classroom activities. • Acquire skills in conducting research activities and using reliable resources
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> • Develop problem-solving skills in mathematics. • Improve reasoning and deduction abilities. • Enhance teamwork and discussion skills. • Develop analytical and synthesis abilities.
Teaching and learning methods
<ul style="list-style-type: none"> • Lectures. • Classroom discussions. • Guidance to useful online resources. • Mini-seminars. • Training students on scientific research preparation.
Evaluation methods
<ul style="list-style-type: none"> • Classroom participation. • Daily, midterm, and final written exams. • Oral exams • Research activities

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	Errors	Identify errors in mathematical computations	12	1-3
Classroom participation Oral exams	General questions & discussions	Nonlinear Equations	Methods for solving nonlinear equations	12	4-6

Daily, midterm, and final written exams					
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	Linear Systems	Methods for solving linear systems	12	7-9
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	Interpolation	Interpolation methods	12	10-12
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	Numerical Differentiation	Numerical differentiation	12	13-15
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	Numerical Integration	Numerical integration	12	16-18
Classroom participation Oral exams Daily, midterm, and final written exams	General questions & discussions	Differential Equations	Numerical solutions of differential equations	12	19-21

Textbooks	'Principles of Numerical Methods' – Dr. Talib Abdul-Samad
References	'Numerical Analysis' – Douglas
Recommended books and references (scientific journals, reports, etc.)	Other academically reliable textbooks in numerical analysis
Electronic references, websites,.....	Online resources and scientific websites

Course development plan

- The course will be further developed by focusing on practical aspects.
- integrating software tools.
- providing the required computer laboratories.

Course description

Course description: Guidance in the College of Education is a specialized technical filter to help the individual understand himself and improve his adaptive abilities in various aspects (personal, social, educational, various) through a unified relationship between the counselor and the counselee, based on scientific foundations and specific processes for growth and adjustment.

23. Affiliation	University of Thi-Qar/ College of Education for Pure Science
24. Department	Mathematics
25. Subject	Guidance and Mental Health
26. Lectures	In person
27. Year	2024/2025
28. Study hours	62 hours (2 hours per week)
29. Date	5/1/2025
Course Objective	
<p>Introduce students to the concept, origins, and development of guidance and its approaches.</p> <p>Acquaint students with the role of the educational counselor and methods of preparation.</p> <p>Enable students to achieve personal adjustment and satisfaction of primary and innate needs.</p> <p>Assist students in adapting to themselves and their environment and in choosing a suitable field of study.</p> <p>Develop positive attitudes and tendencies towards the profession of educational counseling.</p>	

Course outcomes, teaching, learning and assessment methods

- **Cognitive objectives**
- Understand the principles of guidance, counseling, and mental health.
- Prepare students psychologically and educationally for the teaching profession.
- Protect students from problems and help them make independent decisions.
- Assist students in achieving self-realization.
- Enable students to express themselves and their social/school problems.
- Help students cope with stress, anxiety, and different life stages.

<ul style="list-style-type: none"> • Course-Specific Skills Objectives • Motivate students to perform the duties of an educational counselor. • Develop students' tendencies toward forming positive social relations. • Enhance and train students in counseling and guidance skills.
<ul style="list-style-type: none"> • Thinking Skills
<ul style="list-style-type: none"> • Affective and Value-Based Objectives <ul style="list-style-type: none"> • Teach students initiative, teamwork, respect for others, and social conduct. • Stimulate students' motivation for study and effective time management. • Develop tendencies and aptitudes related to teaching and psychological counseling. • Teach students to take personal responsibility.
<ul style="list-style-type: none"> • General and transferable skills (other skills related to employability and personal development). • Introduce students to modern teaching methods. • Train them in educational counseling skills. • Introduce modern counseling tools and their application. • Expose students to scientific innovations in counseling and mental health in coordination with relevant institutions.
Teaching and learning methods
Evaluation methods

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
E-learning / Exam	Lecture / Q&A	Chapter 1: Introduction to Psychological Counseling	Introduction to Psychological Counseling	2	1
E-learning / Exam	Lecture / Q&A	What is Psychology?	What is Psychology?	=	2
	Lecture / Q&A	Fields and Branches of Psychology	Fields and Branches of Psychology	=	3
E-learning / Exam	Lecture / Q&A	Brief History of Counseling Development	History of Counseling Development	=	4
Exam	Lecture / Q&A	Importance of Counseling	Importance of Counseling	=	5
E-learning / Exam	Lecture / Q&A	Goals of Counseling and Educational Guidance	Goals of Counseling and Educational Guidance	=	6
	Lecture / Q&A	Rationale for Counseling	Rationale for Counseling	=	7
E-learning / Exam	Lecture / Q&A	Historical Overview of Student Counseling	Historical Overview of Student Counseling	=	8
	Lecture / Q&A	Counselor Preparation and	Counselor	=	9

		Training	Preparation and Training		
E-learning / Exam	Lecture / Q&A	Counselor Ethics	Counselor Ethics	=	10
	Lecture / Q&A	Tasks of the Student Counselor	Tasks of the Student Counselor	=	11
E-learning / Exam	Lecture / Activities	Chapter 2: Counseling Methods	Counseling Methods	=	12
	Lecture / Q&A	Direct Counseling	Direct Counseling	=	13
E-learning / Exam	Lecture / Q&A	Indirect Counseling	Indirect Counseling	=	14
	Lecture / Q&A	Individual Counseling	Individual Counseling	=	15
E-learning / Exam	Lecture / Q&A	Group Counseling	Group Counseling	=	16
	Lecture / Q&A	Play Therapy for Children	Play Therapy for Children	=	17
E-learning / Exam	Lecture / Q&A	Behavioral Counseling	Behavioral Counseling	=	18
	Lecture / Q&A	Chapter 3: Counseling and Other Sciences	Relation of Counseling to Other Sciences	=	19
E-learning / Exam	Lecture / Q&A	Scientific Foundations of Counseling	Scientific Foundations of Counseling	=	20
	Lecture / Q&A	Chapter 4: Counseling Theories	Counseling Theories	=	21
E-learning / Exam	Lecture / Q&A	Self Theory	Self Theory	=	22
	Lecture / Q&A	Rational Counseling Theory	Rational Counseling Theory	=	23
E-learning / Exam	Lecture / Q&A	Behavioral and Psychoanalytic Theories	Behavioral and Psychoanalytic Theories	=	24
	Lecture / Assignments	Chapter 5: Data Collection Methods	Data Collection Methods	=	25
E-learning / Exam	Lecture / Q&A	Tests and Measurements	Tests and Measurements	=	26
	Lecture / Q&A	Questionnaire	Questionnaire	=	27
E-learning / Exam	Lecture / Q&A	Counseling Interview	Counseling Interview	=	28
	Lecture / Q&A	Case Study	Case Study	=	29
E-learning / Exam	Lecture / Q&A	Cumulative Records	Cumulative Records	=	30
	Lecture / Q&A	Personal Biography	Personal Biography	=	31
E-learning / Exam	Lecture / Projects	Chapter 6: Educational Counseling in Schools	Educational Counseling in Schools	=	32
	Lecture / Q&A	Teacher as Counselor: Roles and Importance	Teacher as Counselor: Roles and Importance	=	33
E-learning / Exam	Lecture / Q&A	General Goals of Parent-Teacher Councils	General Goals of Parent-Teacher	=	34

			Councils		
		Role of Parent Councils in Guidance	Role of Parent Councils in Guidance	=	35

Textbooks	<ul style="list-style-type: none"> Guidance and Mental Health / Dr. Hassan Al-Sayyid, Dr. Sahib Marzouk
References	<ul style="list-style-type: none"> Guidance and Mental Health / Dr. Hassan Al-Sayyid, Dr. Sahib Marzouk Mental Health and Psychotherapy / Dr. Hamed Abdel-Salam Zahran
Recommended books and references (scientific journals, reports, etc.)	Recommended Journals: Journal of Psychological Counseling
Electronic references, websites,.....	<ul style="list-style-type: none"> Psychology Academy, Wikipedia, Arab Encyclopedia of Counseling and Psychotherapy, Psychological Counseling Center – Cairo University, Arab Network of Psychological Sciences, Educational Studies and Psychological Research Centers.

Course development plan

- Extend practical training periods in schools.
- Expose students to the latest developments in guidance and mental health.
- Encourage knowledge exchange among faculty members.
- Keep pace with professional developments in guidance and counseling.

description form

Course description: This course description provides a summary of the main course features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Partial differential equations
4. Lectures	Attendance morning and evening
5. Year	2025-2026
6. Study hours	4 hrs. weekly
7. Date	20/1/2025
Course Objective	
Introducing the types of partial differential equations to the student.	
Studying the methods of solving partial differential equations with giving the required examples.	
Studying some important applications for partial differential equations.	

Course outcomes, teaching, learning and assessment methods

K. Cognitive objectives

- Enabling student for knowing different the methods used for solving partial differential equations .
- Solving different examples as an application for methods of solution to the study undertaking .
- Student learns different types of solutions such as general, specific and singular solution .
- Developing student's skills in solving examples throughout giving some home works .
- Incentivize the student to participate in the lesson in order to digestion of the material throughout giving a discussion at the end of each subject .
- Assessing the range of student understanding to the material using some daily exams .

L. Course-Specific Skills Objectives

- **Student ability to recognize between different types of** partial differential equations .
- Student understanding to the methods of solving partial differential equations and using them flexibly .
- Student learns some realistic applications about partial differential equations .

M. Thinking Skills

- Using an updated Arabic and English sources in writing lectures .
- Giving a discussion at the end of each subject in order to solve some additional examples .
- Giving some unsolved examples in order to be solved by the student .

N. Affective and Value-Based Objectives

- Enhancing student performance in daily exams with grades .
- Encourage the student to improve his academic level and to be consistent .
- Developing the student's ability to conduct scientific discussion .

O. General and transferable skills (other skills related to employability and personal development).

- The student gains flexibility in distinguishing and solving different types of partial differential equations .
- To familiarize the student with some applications of partial differential equations related to daily life . .

Teaching and learning methods

- Details of the study material on the board by solving some examples .
- Give some intellectual home works to enhance the student ability to solve .
- Conduct some discussions and daily exams .

Evaluation methods

- Follow up on student attendance .
- Asking some objective questions related to the lesson .
- Conducting some daily, midterm and final exams .
- Class control during subject explanation .

Course Outline

Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	theoretical	Definition of partial differential equations with some examples	Basic concepts of partial differential equations	8	1
=	=	Types of possible solutions			
=	=	Deriving of the partial differential equations from its exact solution		8	2
Daily exam	=	Deriving of the partial differential equations from its general solution		8	3
=	=	Lagrange's partial differential equation	Partial differential equations of order one	8	4
=	=	Charpit's method	Non-linear partial differential equations	8	5
=	=	Partial differential equations of the form $f(p, q) = 0$		8	6
=	=	Partial differential equations of the form $f(p, q, z) = 0$		8	7
=	=	Partial differential equations of the form $f_1(x, p) = f_2(y, q)$		8	8
Discussion	=	Clairaut's partial differential equation		8	9
Daily exam	=	Some transforms		8	10
=	=	Partial differential operator	Linear partial differential equations	8	11
=	=	Homogeneous partial differential equations with constant coefficients		8	12
Daily exam	=	Non-homogeneous partial differential equations with constant coefficients		8	13
Discussion	=	Cauchy's partial differential equation		8	14
=	=	Four special forms of this type of equation have been studied	Linear partial differential equations of order two with variable coefficients	8	15
Discussion	=	Method of separation variables		8	16
Daily exam	=	Even and odd functions	Fourier series and integrals	8	17
=	=	Fourier series		8	18
=	=	Fourier series for half range		8	19
Discussion	=	Fourier integrals		8	20
Daily exam	=	Heat equation	Applications of	8	21

			partial differential equations		
=	=	Wave equation		8	22
Discussion	=	Laplace's equation		8	23
Daily exam	=	General form for the integral transforms	Integral transforms	8	24
=	=	Laplace's transforms		8	25
=	=	Laplace's transforms for half range		8	26
=	=	Applications of Laplace's transforms		8	27
=	=	Fourier transforms		8	28
Discussion	=	Fourier transforms for half range		8	29
Daily exam	=	Applications of Fourier transforms		8	30

Textbooks	Raisinghania, M. D. (2012). Ordinary and partial differential equations, schand company, LTD.
References	Al-Mayahi, N. F., Mohammed, J. M. (2007). Partial differential equations. Baghdad.
Recommended books and references (scientific journals, reports, etc.)	Kreyszig, E. (2011). Advanced engineering mathematics. John Wiley & sons, 10 ed., Inc
Electronic references, websites,.....	https://scholar.google.com

Course development plan

Using the most modern sources in writing lectures as well as the latest teaching methods .

4th Stage

Course description form

Course description: The differential geometry course covers the following concepts and terms: curve theory in three-dimensional Euclidean space, uniform curves, absolute vectors and vector-valued functions, vector fields, tangent space, parametric representation, arc length, and torsion and curvature theorem.

8. Affiliation	University of Thi-Qar/ College of Education for Pure Science
9. Department	Mathematics
10. Subject	Differential geometry
11. Lectures	In person
12. Year	First semester 2023-2024
14. Study hours	hrs. weekly .13
15. Date	2024/12/15
Course Objective	
<ol style="list-style-type: none"> 1. Understand the concept of a curve in space and deduce proofs for some related theorems. 2. Understand absolute vectors and how to find their values. 3. Study and understand vector-valued functions and know their properties. 4. Calculate the values of derivatives and ends of vector-valued functions. 5. Understand and study the properties of vector fields and prove some of their results. 6. Calculate the arc length of a curve in space. 7. Study and understand the theory of torsion and curvature and distinguish between them. 8. Understand the concept of the Frénet frame. 9. Derive Serret-Frénet differential formulas and apply them to calculate curvature. 	

Course outcomes, teaching, learning and assessment methods

<p>A. Cognitive objectives</p> <ul style="list-style-type: none"> Students will be able to identify the types of curves in Euclidean space and understand the proofs related to curves. Students will be able to understand the concept of absolute vectors, their functions, and how to calculate their values. Students will understand and comprehend the term vector fields and how to prove their theorems. Students will acquire the skill of applying the basics of differential geometry to solve some mathematical problems. Students will be able to understand the concept of the Freinet frame and how to calculate it in practical examples. Students will use the properties of surfaces and apply them to examples in Euclidean space.
<p>B. Course-Specific Skills Objectives</p> <ul style="list-style-type: none"> Ease of access to curricula on a broader scale in the future, i.e., through postgraduate studies after graduation. Creating a core of knowledge for future application of what has been studied. Empowering students, after completing their study of this vocabulary, to apply their studies in the future. Opening a window to learning about the best contemporary methods and approaches.
<p>C. Thinking Skills</p> <ol style="list-style-type: none"> Enhance mental skills by stimulating the individual to think and continually search for new ways to solve problems. Increase intelligence (a person's ability and experience in solving mathematical problems, as well as their flexibility and high ability to deal with mathematical aspects, increases their intelligence). Develop skills, such as the ability to draw specific conclusions by linking events and knowing their sequence. Studying mathematics helps a person overcome limited, stereotypical thinking.
<p>D. Affective and Value-Based Objectives</p> <ul style="list-style-type: none"> The student's voluntary, not forced, commitment to studying the course content. Increased enthusiasm for learning the many concepts in this course. Demonstrated active participation in the science section by presenting their acquired ideas about this course. Fostering a spirit of cooperation among students in completing scientific reports or contributions.
<p>E. General and transferable skills (other skills related to employability and personal development).</p> <ul style="list-style-type: none"> Acquire skills to apply the fundamentals of differential geometry to solve various mathematical problems. Develop the ability to work effectively in a team. Develop the ability to learn independently. Develop the ability to present and discuss ideas.
<p>Teaching and learning methods</p> <p>The teaching method utilizes traditional and contemporary methods, blending both. Instruction is delivered in the form of theoretical lectures, with the professor providing the explanation. Occasionally, students may be asked incidental questions as a reminder of the material or to test their understanding of what they have previously learned. The learning method relies on lectures and theoretical discussion, as well as occasionally posing interesting questions related to the topic, which engages the student in gaining knowledge with interest and understanding.</p>
<p>Evaluation methods</p> <p>For daily and semester exams, we sometimes ask random questions during lectures to evaluate students, in addition to students participating in solving questions, discussions, and class assignments.</p>

Course Outline

Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Daily exam, oral questions and homework	Theoretical lecture & discussion	Absolute vectors (bound vector and free vector)	Curves in three-dimensional space	8	1
=	=	Operations on vectors	=	=	2
=	=	Trilateral Space Orientation	=	=	3
=	=	Linear independence of the Guidance base	=	==	4
=	=	Vector or external product and mixed product	Types of vector products	=	5
=	=	Complex vector functions	Vehicles	=	6
=	=	Limit and Continuity of Vector Functions	vector functions	=	7
=	=	Space and Application Tangent	Curves in n-dimensional space	=	8
=	=	natural frame field	Vector field	=	9
=	=	Intermediate Representation of a Curve	Curve Representation	=	10
=	=	Local differentiated application	=	=	11
=	=	Finding the value of the simple arc	Simple arc	=	12
=	=	Geometric Curve and Intermediate Representation	Intermediate Representation	=	13
Exam score evaluation	Written exam	First semester exam	There is no lecture	=	14
Exam score evaluation	Written exam	First semester exam	There is no lecture	=	15

Textbooks	Differential Geometry, Dr. Samirabo Aql Dr. Mohammed Sheikh
References	Differential Geometry Prof. Dr. Nassar Hassan Al-Salami Al-Rushd Library 2008
Recommended books and references (scientific journals, reports, etc.)	Book Title: An Introduction to Differential Manifolds and Geometry. Publisher: Academic Press, New York. Author: W. Boothby. Year: 2003
Electronic references, websites,.....	Michael Murray's online differential geometry course: http://www.maths.adelaide.edu.au/mich

Course development plan

Focus on sources that are easy to understand and practical, so that students feel flexible in understanding the course content. Identify specific sources that relieve the student of the need to review other sources, rather than relying on repetitive sources with complex concepts.

Course description form

Course description: This course deals with a simple introduction to functional analysis. The course begins by studying the vector space and its subsets of special mathematical properties such that these subsets are as follow: the symmetric set, the balanced set, the convex set, and the affine set. After that, it studies the relationships with these sets and also their relationship with the vector subspaces. The course addresses the definition of metric space. The course is interested in studying normed space and related topics. Finally, the course studies Banach space, Hilbert space, and inner product space.

Affiliation	University of Thi-Qar/ College of Education for Pure Science
Department	Mathematics
Subject	Functional Analysis
Lectures	30 Weeks
Year	2024-2025
Study hours	60 hrs.
Date	4\1\2025
Course Objective	
The course aims to provide students with theoretical information about the subject of functional analysis because of its importance in their future studies in graduate studies.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- Enable the student to distinguish between linear and nonlinear spaces.
- Increasing the student's knowledge of dealing with the algebraic sets studied in the course.
- Developing intellectual abilities and skills in studying the relationships between these sets.

B. Course-Specific Skills Objectives <ul style="list-style-type: none"> Ease of dealing with these spaces in the future, i.e. postgraduate studies. After completing his study of these vocabulary in the future, he will be able to apply his studies in other fields of sciences such as physics and economics.
C. Thinking Skills <ul style="list-style-type: none"> Develops his scientific ideas in the field of mathematical analysis. The maturation of the student's ideas in the direction of the concepts of this subject. Gives the student logical thinking in pure mathematical sciences.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> The student is attached to studying the course vocabulary voluntarily and not forcedly. Increasing his passion in learning about many of the concepts of this course. Spreading the spirit of cooperation among students in the achievement of scientific reports or contributions.
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> The student acquires a skill in dealing with the concepts of these vocabulary. At a high level of skill, it can be matured in the future to be able to apply it to other sciences.
Teaching and learning methods <ul style="list-style-type: none"> The method of teaching is the use of algebraic and analytical methods and a combination between them so that they are given to them in the form of theoretical lectures, where the professor is the one who explains, and sometimes students may ask his questions occasionally as a reminder of the previous material or test their understanding of what they have learned previously. The learning method is to rely on lectures and theoretical discussion, as well as to ask some interesting questions on the subject at times, which attract the student to acquire information with his desire and understanding.
Evaluation methods <ul style="list-style-type: none"> Daily exams Sometimes we ask occasional questions during the lecture to evaluate students.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
The daily exam is after a period of time, not a specific one-week period, as well as oral questions	Theoretical Lecture	Vector space and fields	Understanding the concept of vector space and fields	4	1
=	=	Balanced set and sub-Spaces	Understanding the concept of balanced set and sub-spaces	=	2
=	=	Linear combination	Understanding the concept of Linear combination	=	3
=	=	Direct sum	Understanding the	=	4

			concept of Direct sum		
=	=	Linear independence	Understanding the concept of Linear independence	=	5
=	=	Basis and Dimension	Understanding the concept of Basis and Dimension	=	6
=	=	Convex	Understanding the concept of Convex	=	7
=	=	Affine set	Understanding the concept of Affine set	=	8
=	=	Linear translation	Understanding the concept of Linear translation	=	9
=	=	Metric space and normed space	Understanding the concept of Metric space and normed space	=	10
=	=	Metric space and normed space	Understanding the concept of Metric space and normed space	=	11
=	=	Open and Closed Balls	Understanding the concept of Open and Closed Balls	=	12
=	=	Convergence in normed spaces	Understanding the concept of Convergence in normed spaces	=	13
=	=	Convergence in normed spaces	Understanding the concept of Convergence in normed spaces	=	14
There isn't any	There isn't any	First Semester Exam	There isn't any	3	15
There isn't any	There isn't any	First Semester Exam	There isn't any	3	16
The daily exam is after a period of time, not a specific one-week period, as well as oral questions	Theoretical Lecture	Spaces in Banach	Understanding the concept of Spaces in Banach	=	17
=	=	Spaces in Banach	Understanding the concept of Spaces in Banach	=	18
=	=	Pre- Hilbert space	Understanding the concept of Pre- Hilbert space	=	19
=	=	Pre- Hilbert space	Understanding the	=	20

			concept of Pre-Hilbert space		
=	=	Hilbert Space	Understanding the concept of Hilbert Space	=	21
=	=	Hilbert Space	Understanding the concept of Hilbert Space	=	22
=	=	Orthogonality	Understanding the concept of Orthogonality	=	23
=	=	Orthonormal	Understanding the concept of Orthonormal	=	24
=	=	Discussion	Discussion	=	25
There isn't any	There isn't any	Second Semester Exam	There isn't any	3	26
There isn't any	There isn't any	Second Semester Exam	There isn't any	3	27
The daily exam is after a period of time, not a specific one-week period, as well as oral questions	Theoretical Lecture	Discussion	Discussion	4	28
There isn't any	There isn't any	Final examination	There isn't any	3	29
There isn't any	There isn't any	Final examination	There isn't any	3	30

Textbooks	Noori Farhan Al-mayahi, lectures on functional analysis, college of science, university of Al-Qadisiya.
References	Lectures by Dr. Nouri Farhan Al-Mayahi in Functional Analysis
Recommended books and references (scientific journals, reports, etc.)	Any book, research or journal that is interested in functional analysis
Electronic references, websites,.....	Any reliable site that is interested in Functional analysis

Course development plan

- Paying attention to foreign sources that are easy to understand so that they are of an applied quality so that the student feels the flexibility of understanding the vocabulary of the course.
- Identifying specific sources that dispense the student from reviewing other sources, and not too many recurring sources in their concepts of a complex nature in presenting concepts.

Course description form

Course description: Topology (topology) includes the study of topological spaces, open and closed sets, types of isomorphisms and continuous functions, and space properties such as continuity and compactness, with the goal of building a strong foundation for graduate studies in mathematics. It also includes the study of subspaces, interior, exterior, and boundary sets, endpoints, and derived sets.

8. Affiliation	University of Thi-Qar/ College of Education for Pure Science
9. Department	Mathematics
10. Subject	Topology
11. Lectures	preliminary study
12. Year	2024/2025
13. Study hours	30
14. Date	6/1/2025
Course Objective	
Teaching students advanced topological spaces and continuous functions between them	
Teaching the student about division space and its properties	
Teaching the student compact topological spaces and their properties	
Course outcomes, teaching, learning and assessment methods	

A. Cognitive objectives <ul style="list-style-type: none"> • A1. Enabling the student to understand advanced topological spaces • A2. Increasing the student's knowledge of continuous functions on advanced topological spaces • A3. Developing the student's intellectual skills and abilities in studying separation axioms on advanced topological spaces • A4. Developing the student's skills in understanding topological properties and genetic properties • A5. Motivating the student to develop their skills in studying continuous and discontinuous topological spaces • A6. Increasing the student's knowledge and skills in developing topological spaces and their properties in preparation for doctoral studies
B. Course-Specific Skills Objectives <ul style="list-style-type: none"> • B1 - Ease of dealing with advanced topological spaces in the future. • B2 - Encouraging the student to develop his/her intellectual skills in this course.
C. Thinking Skills <ul style="list-style-type: none"> • Readings, self-study, discussion groups, and classroom activities. • Directing students to websites for useful information. • Providing examples and questions that stimulate students' thinking.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> • Daily tests, midterm and final tests.
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> • Connecting the topics studied in previous years with the current year to understand the importance of the lesson topic.
Teaching and learning methods
<ul style="list-style-type: none"> • -Manage the lecture so that students feel the importance of their time. • -Encourage outstanding students' answers and evaluate weak students' answers through discussion. • -Assign homework. • -Allocate a percentage of the grade based on student participation and activities.
Evaluation methods
<ul style="list-style-type: none"> • Active classroom participation is evidence of student commitment and responsibility. • Developing students' skills in topological spaces • Developing students' ability to discuss and dialogue • Developing students' ability to conduct group scientific discussions

Course Outline					
Evaluation methods	Subject	Teaching methods	Learning outcomes	hrs.	Week
Written exam	Definition of a topological space with	Discussion		4	1

	examples				
Written exam	Types of topological spaces	Discussion		=	2
Written exam	Definition of a base and examples with theorems	Discussion		=	3
Written exam	Definition of a subbase and examples with theorems	Discussion		=	4
Written exam	Groups on a topological space	Discussion		=	5
Written exam	Definition of a subspace of a topological space and examples	Discussion		=	6
Written exam	Continuity of functions between topological spaces	Discussion		=	7
Written exam	Isomorphism between topological spaces	Discussion		=	8
Written exam	Definition of a product space, its types, and properties	Discussion		=	9
Written exam	Definition of the addition of topological spaces and examples	Discussion		=	10
Written exam	Understanding the axioms of counting and the axioms of separation	Discussion		=	11
Written exam	Understanding convergence in a topological space	Discussion		=	12
Written exam	Understanding compact spaces	Discussion		=	13
Written exam	Understanding the types of compact spaces	Discussion		=	14
Written exam	Exam	Discussion		=	15
References			التبولوجيا العامه ,محمد جواد سعد الدين ,عربي الزوبعي ,بسام الناشف ,جامعة بغداد 1987		
Recommended books and references (scientific journals, reports, etc.)			J.N.Sharma”Topology”Krishna Prakashan Mandir		
Electronic references, websites,.....			J.N.Sharma”Topology”Krishna Prakashan Mandir		
Course development plan					
<ul style="list-style-type: none">The curriculum is periodically updated to keep pace with scientific developments and progress in all fields.Discussions with students are added and exams are conducted to encourage them to study and develop their skills.					

Course description form

Course description: This course description provides a concise summary of the key characteristics of the course and the expected learning outcomes for the student to achieve, demonstrating whether they have maximized the benefits of the available learning opportunities. It must be linked to the program description.

1. Affiliation	University of Thi-Qar/ College of Education for Pure Science
2. Department	Mathematics
3. Subject	Practical Education
4. Lectures	In person
2. Year	2024-2025
3. Study hours	32
4. Date	5-2-2025
Course Objective	
Developing students skills in theories, concepts, and teaching skills.	
Developing the skills of trained students on how to manage the classroom environment.	
Developing the skills of trainee students on how to motivate their students to learn.	

Course outcomes, teaching, learning and assessment methods

A. Cognitive objectives

- To familiarize trainee students with the concept of practical education and its general objectives.
- To familiarize trainee students with the duties and rights of a trainee student and the responsibilities of a subject teacher, school principal and educational supervisor.
- Developing the skills of trainee students on how to formulate behavioral objectives in teaching.

B. Course-Specific Skills Objectives <ul style="list-style-type: none"> Skill in taking responsibility and facing students. Skill of diverse teaching methods in the classroom.
C. Thinking Skills <ul style="list-style-type: none"> Definitions of requests for shared data collection related to curriculum items. Developing the skill of preparing various classroom questions.
D. Affective and Value-Based Objectives <ul style="list-style-type: none"> Guiding students to learn how to ask external questions related to the curriculum.
E. General and transferable skills (other skills related to employability and personal development). <ul style="list-style-type: none"> Developing the skill of trainee students in managing the classroom environment and regulating classroom behavior. Preparing a report on their study of each cognitive aspect.
Teaching and learning methods
<ul style="list-style-type: none"> Use of the boardThought-provoking questionsAssessment of participation with grades. The dialogue and discussion are enhanced by conducting field lessons to observe the students' performance inside the classroom.
Evaluation methods
<ul style="list-style-type: none"> Presenting mini-lessons by students and preparing research and an oral exam, as well as a midterm and final exam.

Course Outline					
Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Discussion	Theoretical	The general framework for practical education	Introducing them to practical education	2	1
Discussion	Theoretical	Classroom management skill	Introducing them to the importance of classroom management in the educational process.	2	2
Discussion	Theoretical	Goals at the program level and goals at the student level	Introducing them to the objectives of practical education	2	3
Discussion	Theoretical	General and specific educational objectives	Introducing them to educational goals	2	4
Discussion	Theoretical	Classroom management skills and types of methods for dealing with students	The importance of classroom management in the educational process.	2	5
Discussion	Theoretical	The skill of lesson preparation, the skill of closing, and the skill of clarity in explanation and	Lesson preparation skill	2	6

		interpretation.			
Discussion	Theoretical	The skill of reinforcement and the skill of providing feedback	The importance of reinforcement in the learning process	2	7

Textbooks	Practical Education
References	Scientific journals - researchMaysoun Al-Dweiri: Practical Education Guide, Dar Al-Fikr, 2012
Recommended books and references (scientific journals, reports, etc.)	
Electronic references, websites,.....	www.damascusuniversity.edu.sy

Course development plan

- Twinning with other public colleges and Arab and foreign colleges

Course description form

Course description : This course description provides a concise summary of the key characteristics of the course and the expected learning outcomes that students should achieve, demonstrating whether they have maximized the benefit of the available learning opportunities. It must also be linked to the overall program description. The course in Complex Analysis provides an overview of the fundamental properties of complex functions, integration, as well as engineering and physical applications across various scientific fields.

15. Affiliation	University of Thi-Qar/ College of Education for Pure Science
16. Department	Mathematics
17. Subject	Complex Analysis
18. Lectures	Every week
19. Year	2025-2024
20. Study hours	120
21. Date	2024/9/1
Course Objective	
Introduce students to the concept of complex numbers and their properties	
Understand analytic functions.	
Familiarize students with elementary functions	
Introduce the concept and applications of complex integration	

Understand sequences and series of complex numbers, including convergence and divergence.

Study power series and the conditions for their validity.

- Understand singular points and the role of residues in evaluating complex integrals.

Course outcomes, teaching, learning and assessment methods

- **Cognitive objectives**

- Knowledge of complex numbers and their properties
- Understanding complex functions
- Knowledge of basic complex functions
- Knowledge of the concept of complex integration and its applications -Distinguish between convergent and divergent sequences and series.
- Understand Taylor and Laurent series and the relationship between them.
- Identify singular points and poles, and determine their orders.
- Apply the residue theorem to evaluate integrals.
- Understand the applications of conformal mappings.

- **Course-Specific Skills Objectives**

- -Preparation of scientific reports.
- - Completion of graduation projects.

- **Thinking Skills**

- -Develop the ability to complete assignments and submit them on time.
- -Develop scientific thinking skills.
- -Actively participate in class activities.
- - Conduct research activities and use reliable sources to support ideas.

- **Affective and Value-Based Objectives**

- -Apply complex analysis to solve mathematical problems.
- -Solve problems with deductive and inductive reasoning.
- -Enhance teamwork and scientific discussion skills.
- - Develop analytical and synthetic reasoning.

- **General and transferable skills (other skills related to employability and personal development).**

- . Guidance on academic electronic resources.
- Seminars and small-group discussions.
- Training in writing scientific research.

Teaching and learning methods

- Lectures.
- -Classroom discussions..

Evaluation methods

- Class participation.
- Written exams (daily, midterm, and final).
- Oral exams.
- Research activities.

Course Outline

Evaluation methods	Teaching methods	Subject	Learning outcomes	hrs.	Week
Question and Answer	Theoretical and discussion	Complex Numbers and Their Properties modulus.	Understanding Complex Numbers and Their Properties modulus.	4	1
Question and Answer	Theoretical and discussion	Definitions, conjugates and Properties	Knowledge Definitions, conjugates,	4	2
Question and Answer	Theoretical and discussion	polar form, powers	Understanding polar form, powers	4	3
Question and Answer	Theoretical and discussion	and roots using De Moivre's	Understanding and roots using De Moivre's	4	4
Question and Answer	Theoretical and discussion	Complex Functions –, continuity,	Complex Functions –, continuity,	4	5
Question and Answer	Theoretical and discussion	Limits	Limits	4	6
Question and Answer	Theoretical and discussion	continuity,	continuity,	4	7
Question and Answer	Theoretical and discussion	differentiation, Cauchy-Riemann conditions.	differentiation, Cauchy-Riemann conditions.	4	8
Question and Answer	Theoretical and discussion	Elementary Functions – Exponential, functions,	Elementary Functions – Exponential, functions,	4	9
Question and Answer	Theoretical and discussion	trigonometric and inverse	trigonometric and inverse	4	10
Question and Answer	Theoretical and discussion	, hyperbolic and inverse hyperbolic	, hyperbolic and inverse hyperbolic	4	11
Question and Answer	Theoretical and discussion	Logarithmic functions complex exponents	Logarithmic functions complex exponents	4	12
Question and Answer	Theoretical and discussion	Complex Integration –	Complex Integration –	4	13
Question and Answer	Theoretical and discussion	Integration and Cauchy's integral formulae.	Integration and Cauchy's integral formulae.	4	14
Question and Answer	Theoretical and discussion	Some Theorems and Their Applications	Some Theorems and Their Applications	4	15
Question and Answer	Theoretical and discussion	Sequences and Series – Definitions, convergence and divergence, radius of	Sequences and Series – Definitions, convergence and	4	16

		convergence.	divergence, radius of convergence.		
Question and Answer	Theoretical and discussion	Power Series		4	17
Question and Answer	Theoretical and discussion	Cauchy-Hadamard theorem	Power Series	4	18
Question and Answer	Theoretical and discussion	, Taylor and Laurent series,	Cauchy-Hadamard theorem	4	19
Question and Answer	Theoretical and discussion	Cauchy's inequality	, Taylor and Laurent series,	4	20
Question and Answer	Theoretical and discussion	Residues – Calculating residues	Cauchy's inequality	4	21
Question and Answer	Theoretical and discussion	types of singularities,	Residues – Calculating residues	4	22
Question and Answer	Theoretical and discussion	applications to evaluating real integrals.	types of singularities,	4	23
Question and Answer	Theoretical and discussion	Theory of Real Residues	applications to evaluating real integrals.	4	24
Question and Answer	Theoretical and discussion	discussion		4	25
Question and Answer	Theoretical and discussion	Conformal Mappings –,	Theory of Real Residues	4	26
Question and Answer	Theoretical and discussion	Applications and importance in mathematics	discussion	4	27
Question and Answer	Theoretical and discussion	physics, and medicine.	Conformal Mappings –,	4	28
Question and Answer	Theoretical and discussion	discussion	Applications and importance in mathematics	4	29
Question and Answer	Theoretical and discussion	discussion	physics, and medicine.	4	30

Textbooks	1-Complex functions and their applications. 2- Introduction to Complex Analysis
References	James Ward Brown & Raul V. Churchill, Complex Variables & Applications, Eighth Edition, McGraw-Hill, 2009. - Alan Jeffrey, Complex Analysis and Applications, 2006. - L. V. Ahlfors, Complex Analysis, Second Edition, 1966.
Recommended books and references (scientific journals, reports, etc.)	Special requirements include, but are not limited to, workshops, periodicals, software, and websites (such as .(www.Freescience.info/math
Electronic references, websites,.....	

Course development plan

