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

Academic Program and Course Description Guide 2025-2026

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Academic Program Description Form

University Name : Tikrit University

College / Institute : College of Education for Girls

Scientific Department : Department of Mathematics

Academic or Professional Program Name: Master of Mathematics

Final Certificate Name: Master of Mathematics

Academic System: Semester

Description Preparation Date :1-9-2025

File filling date: 1-9-2025

Signature: **Signature:**

Head of department: Prof. Dr.Rana Bahgat Yassin **Scientific Associate Name Prof.Dr.As. Ashraf Gamal Mahmoud**

Date: 1-9-2025 **Date :** 1-9-2025

Check the file by:

Division of Quality Assurance and University Performance

Name of the Director of the Division of Quality Assurance and University Performance:
Eng. Shahd Khaled. Hamid

Date 1-9-2025

Signature Approval of the Dean:

Prof. Dr. Najla Abdel Hussein Aliwi

1,9,2025

Course Description Form

1. Course Name:
Ordinary differential equations
2. Course Code:
Math.204
3. Semester / Year:
2025-2026
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Actual presence/distance learning/recording video lessons
6. Number of Credit Hours (Total) / Number of Units (Total)
30hours / 2unit
7. Course administrator's name (mention all, if more than one name)
Name: Amer Fadhel Nassar Email: amer6767@tu.edu.iq
8. Course Objectives

Course Objectives	**• Study and knowledge of equations and their types** **• The concept of finding solutions to equations** **• Study the concept of forming equations**
9. Teaching and Learning Strategies	
Strategy	● Use explanation and clarification to present concepts. ● Interact with students through discussions and practical exercises. ● Use real-life examples and applications to illustrate mathematical ideas.

10. Course Structure

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

2	**4**	Chapter 1	Types of differential equations - the order of the differential equation - the degree of the differential equation - linear differential equations - solving the differential equations - forming the differential equation from its general solution - the theorem of the existence of the solution of the differential equation and the unity of the solution and its generalization to order n	Electronic lectures, smart board and pen	Exam, reports
6	**12**	Chapter 2	Equations whose variables separate - equations of the homogeneous type - differential equations with linear coefficients - exact differential equations - linear differential equations - Bernoulli's equation - reducing the order of equations	Electronic lectures, smart board and pen	Exam, reports
2	**4**	Chapter 3	Higher order equations - simultaneous differential equations - engineering applications - physical applications	Electronic lectures, smart board and pen	Exam, reports
5	**10**	Chapter 4	Linear differential equations - the operator- solving linear differential equations - Euler's equation	Electronic lectures, smart board and pen	Exam, reports

11. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.:

- Daily preparation.
- Daily exams.
- Oral and monthly tests.
- Written tests.
- Preparing reports and research projects.
- Quarterly activities and participation in discussions.
- Student performance in class and interaction with study materials

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	[1] Khaled Ahmed Al-Samarrai, Yahya Abdel Saeed: Methods of solving differential equations. [2] Salim Ismail Al-Gharabi, Sabah Hadi Al-Jassim: Differential equations.
Main references (sources)	[3] S. K. Kate: Engineering Mathematics - II
Recommended books and references (scientific journals, reports...)	Thomas calculus 12th edition
Electronic References, Websites	• University websites that provide educational materials on differential equations • Scientific articles and research available online in the field of differential equations.

1. **Course Name**:
Functional Analysis
2. **Course Code:**
3. **Semester / Year:**
2025-2026
4. **Description Preparation Date:**
1/ 9/ 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 2 unit
7. Course administrator's name (mention all, if more than one name)
Name: Elaf Sabah Abdulwahid **Email: elafs.math@tu.edu.iq**
8. Course Objectives
- **Study and knowledge of normed space.** - **Study and knowledge of inner product space.** - **Study and knowledge some properties of Hilbert space.** - **Study and knowledge linear functional and linear operator on Hilbert space.** - **Study and knowledge separable space.** - **Study and knowledge invertible on Hilbert space.**
9. Teaching and Learning Strategies

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

		Required Learning			**Evaluation**

Week	Hours	Outcomes	Unit or subject name	Learning method	method
1-2	4	Introduction to Hilbert space with some examples and theorems.	Hilbert space	Electronic lectures, smart board ,pens	Written and daily exams with assignments
3-5	6	Study of seprable space and give some theorems., propositions and examples .	Separable space.	Electronic lectures, smart board ,pens	Written and daily exams with assignments
6-7	4	study orthogonal and orthogonal complement with some examples and theorems	Orthogonal and orthogonal complement	Electronic lectures, smart board ,pens	Written and daily exams with assignments
8-9	4	Study some properties of Fourier series and convex set.	Fourier series and convex set	Electronic lectures, smart board ,pens	Written and daily exams with assignments
10-11	4	Study some properties of bounded Linear functional	Linear functional	Electronic lectures, smart board ,pens	Written and daily exams with assignments
12-13	4	Study some properties of bounded Linear operator with some examples.	Linear operators	Electronic lectures, smart board ,pens	Written and daily exams with assignments
14-15	4	Study some operators in Hilbert space.	operators in Hilbert space	Electronic lectures, smart board ,pens	Written and daily exams with assignments

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Introductory Functional Analysis with Application
Recommended books and references (scientific journals, reports...)	By Erwin Kreyszig.
Electronic References, Websites	Introduction to Hilbert space by Berberian.

Course Description Form

1. Course Name:
Time series
2. Course Code:
3. Semester / Year:
2025-2026
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours every week \ Total hours are 30 hours
7. Course administrator's name (mention all, if more than one name)
Name : Hiba Hani Abdullah Emil : hiba.h.a.83@tu.edu.iq
8. Course Objectives

Course Objectives - Study and knowledge of time series and types of models in linear time series - Study concept of stationary and what is dependent - Study spectral density function and perdiction	.....

9. Teaching and Learning Strategies	
Strategy	Applying various teaching methods ,including - Giving lectures Discussion method and electronic method.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**2**	Random variable ,stochastic processes	Stationary stochastic	Electronic lectures,	Written and daily exams

		,time series with examples ,first and second order and complete stationary process ,autocovariance and autocorrelation function	processes	smart board ,pen	with assignments
2-3	4	White noise process and autoregressive models of orders 1&2	Standard discrete random models	Electronic lectures, smart board ,pen	Written and daily exams with assignments
4-5	4	autoregressive models of orders p AR(P),moving average models MA(q), mixed ARMA(P,q) models	Standard discrete random models	Electronic lectures, smart board ,pen	Written and daily exams with assignments
6	2	The general linear model and Harmonic process	Standard discrete random models	Electronic lectures, smart board ,pen	Written and daily exams with assignments
7-8	4	White noise process and autoregressive models of orders 1&2	Standard continuity random models	Electronic lectures, smart board ,pen	Written and daily exams with assignments
9-10	4	autoregressive models of orders p AR(P) and moving average models MA(q)	Standard continuity random models	Electronic lectures, smart board ,pen	Written and daily exams with assignments
11-13	6	Fourier function and spectral analysis of periodic function and non -periodic function , spectral analysis of stationary process, relationship between spectral analysis and autocovariance and autocorrelation function	spectral analysis of time series	Electronic lectures, smart board ,pen	Written and daily exams with assignments
14-15	4	Find prediction by Kolomogrov approach in linear prediction and how find the value in future	Prediction	Electronic lectures, smart board ,pen	Written and daily exams with assignments

Course Description Form

1. Course Name:

Topology

2. Course Code:

3. Semester / Year:

2025-2026

4. Description Preparation Date:

2025-9-1

5. Available Attendance Forms:

Weekly

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

2 hours every week \ Total hours are 30 hours

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

Name : Zinah taha abduqader
Emil : ztaha @tu.edu.iq

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8. Course Objectives

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Course Objectives	
- Study and knowledge of Product topological spaces - Study types of Nano topological spaces - Study the concept Grill open sets	

9. Teaching and Learning Strategies

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

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Topological spaces	Open set ,closed set, Bases and subbases	Electronic lectures, smart board	Written and daily exams with

				,pen	assignments
2	2	Topological spaces	Interior , exterior ,boundary, closure of a set	Electronic lectures, smart board ,pen	Written and daily exams with assignments
3	2	Connectedness	Separated sets , connected sets, locally connected	Electronic lectures, smart board ,pen	Written and daily exams with assignments
4-5	2	Continuity and topological equivalence	Continuous functions , open and closed and homeomorphism	Electronic lectures, smart board ,pen	Written and daily exams with assignments
6-8	2	Compactness	Covers ,compact sets , locally compact	Electronic lectures, smart board ,pen	Written and daily exams with assignments
9-11	2	Compactness	Covers ,compact sets , locally compact	Electronic lectures, smart board ,pen	Written and daily exams with assignments
12-15	2	Separation axioms	T1 –space , T2-space, regular space and normal space	Electronic lectures, smart board ,pen	Written and daily exams with assignments

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	General Topolgy Seymour lipschutz
Main references (sources)	1977 Malaya Journal of Matematik
Recommended books and references (scientific journals, reports…)	Topology and maps by T. Husain
Electronic References, Websites	International Journal of mathemand statistics invention

Course Description Form

1. Course Name:
Plagiarism
2. Course Code:
Math.203
3. Semester / Year:
2025-2026
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours every week \ Total hours are 30 hours
7. Course administrator's name (mention all, if more than one name)
Name : Sundus Noory shukur Email : snory@tu.edu.iq .....
8. Course Objectives .....

• Providing students with prior knowledge on how to conduct scientific research and the scientific aspects of research, including academic integrity, plagiarism, and stealing. • Providing students with scientific advisory information on how to confront the profession and build a strong personal profile through the directions and advice provided to them.	

9. Teaching and Learning Strategies

Strategy	- Modern teaching and learning strategies - where the teacher is prepared, trained and qualified

10. Course Structure

	Hours	Required Learning			Evaluation	

Week		Outcomes	Unit or subject name	Learning method	method
1	2 hours	CHAPTER 1	Definition of Plagiarism	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework
2	2 hours	CHAPTER 2	The available percentage of Plagiarism allowed in Iraq	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework
3	2 hours	CHAPTER 3	The difference between Plagiarism and Quotation	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework
4	2 hours	CHAPTER 4	Types of Plagiarism programs	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework
5	2 hours	CHAPTER 5	Academic integrity	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework
6	2 hours	CHAPTER 6	Types of scientific plagiarism	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework

7	2 hours	CHAPTER 7	Penalties for plagiarism	Electronic lectures, lecture method, smart board and pen	Daily and monthly test homework
8	2 hours	CHAPTER 8	Benefits of plagiarism		Daily and monthly test homework

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ...etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Curriculum and textbook
Main references (sources)	General teaching methods
Recommended books and references (scientific journals, reports…)	Cognitive learning and teaching strategies
Electronic References, Websites	Sober websites. - Virtual library. - Library sites in some international universities

Description Form

1. Course Name:
intuitionistic Topology
2. Course Code:
3. Semester / Year:
2025-2026
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours every week \ Total hours are 30 hours
7. Course administrator's name (mention all, if more than one name)
Name : Hiba Omar Emil : hom_34@tu.edu.iq
8. Course Objectives

	Course Objectives - Study and knowledge of Product topological spaces - Study types of Nano topological spaces - Study the concept Grill open sets

9. Teaching and Learning Strategies	
Applying various teaching methods ,including - Giving lectures Discussion method and electronic method.	**Strategy**

10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	Week
Written and daily exams with assignments	Electronic lectures, smart board ,pen	Open set ,closed set, Bases and subbases	Intuitionistic Topological spaces	**2**	**1**

Written and daily exams with assignments	Electronic lectures, smart board ,pen	Interior , exterior ,boundary, closure of a set	Intuitionistic Topological spaces	2	**2**
Written and daily exams with assignments	Electronic lectures, smart board ,pen	Separated sets , connected sets, locally connected	Connectedness	2	3
Written and daily exams with assignments	Electronic lectures, smart board ,pen	Continuous functions , open and closed and homeomorphism	Continuity and Intuitionistic topological equivalence	2	4-5
Written and daily exams with assignments	Electronic lectures, smart board ,pen	Covers ,compact sets , locally compact	Compactness	2	6-8
Written and daily exams with assignments	Electronic lectures, smart board ,pen	Covers ,compact sets , locally compact	Compactness	2	9-11
Written and daily exams with assignments	Electronic lectures, smart board ,pen	T1 –space , T2-space, regular space and normal space	Separation axioms	2	12-15

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly,r written exams, reports etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	