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

Academic Program and Course Description Guide

2024

Introduction:

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

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staP 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, quaJerly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: Computer Science and Mathematical College

Scientific Department: Mathematics Department

Academic or Professional Program Name: Bachelor of Mathematics

Final Certificate Name: Bachelor's degree in Mathematics

Academic System: Semester

Description Preparation Date: 2023-2024

File Completion Date: 31/3/2024

Signature:	**Signature:**
Head of Department Name:	**Scientific Associate Name:**
Date:	**Date:**

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

1. Program Vision
Program vision is written here as stated in the university's catalogue and website.
2. Program Mission
Program mission is written here as stated in the university's catalogue and website.
3. Program Objectives
General statements describing what the program or institution intends to achieve.
4. Program Accreditation
Does the program have program accreditation? And from which agency?
5. Other external influences
Is there a sponsor for the program?

6 Program Structure				
Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements				
College Requirements				

Department Requirements				
Summer Training				
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Year 4		Complex Analysis		

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods

Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	**Lecturer**

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full—time, and part—time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14. Program Development Plan

A- Introducing (some ready-made electronic mathematical programs) for students to compare the solved solutions manually.

B- Changing vocabulary annually by no more than 10%, based on the latest sources.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
year 4		Complex Analysis 1	Basic												

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

Course Description Form

1. Course Name: Complex Analysis
2. Course Code:
3. Semester / Year: Semester 1
4. Description Preparation Date: 31-3-2024
5. Available Attendance Forms: presence
6. Number of Credit Hours (Total) / Number of Units (Total): 60 hours
7. Course administrator's name (mention all, if more than one name)
Name: Suha Ibrahim Salih Email: suhaibrahim3@tu.edu.iq
8. Course Objectives

Course Objectives	• For the student to become familiar with analytical functions and what is related to them in limits, continuity, and derivation. • To become familiar with the Cauchy-Riemann equations, their sufficient conditions, and harmonic functions • For the student to become familiar with prime, exponential, logarithmic, trigonometric, hyperbolic trigonometric functions, inverse trigonometric functions, and inverse hyperbolic trigonometric functions. • For the student to become familiar with definite integration and linear integration, in addition to the theorems related to integration.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

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

1	4	The complex analysis and complex plane	Definition of complex analysis with a historical overview, the most important applications of the topic, and the emergence of complex numbers with algebraic properties.	Lecture	Discussion and tests
2	4	The complex analysis and complex plane	Cartesian and polar representation of complex numbers, powers and roots	Lecture	Discussion and tests
3	4	Topology in $\mathbb{C}$, functions, limit, and continuity	Definition of topology at the complex plane with some examples, definition of functions with some examples, and theorems	Lecture	Discussion and tests
4	4	Cauchy-Riemann theorem	Cauchy-Riemann theorem with some examples	Lecture	Discussion and tests
5	4	Analytical functions, harmonic functions	Definition of analytic and Harmonic functions with some examples and theorems	Lecture	Discussion and tests
6	4	Mandelbrot and Julia sets	Definitions and examples with some theorems	Lecture	Discussion and tests

7	4	Elementary Analytic functions	Definition of analytic functions, polynomials, and trigonometric functions with some properties, some examples, and the exponential function.	Lecture	Discussion and tests
8	4	Elementary Analytic functions	Rational functions, Logarithmic functions, and Hyperbolic functions	Lecture	Discussion and tests
9	4	Complex integrations	Definition of complex integration with some theorems and examples	Lecture	Discussion and tests
10	4	Contours Integrals and Contour curves	The basic theorems of contour integrals with some examples	Lecture	Discussion and tests
11	4	Definite integration, Contour Integration to solve definite Integrals	Some theorems and examples	Lecture	Discussion and tests
12	4	Green's theorem, Cauchy's inequality	Green's theorem, Cauchy's inequality with some examples	Lecture	Discussion and tests
13	4	Cauchy-Corsa theorem, Cauchy integral formulas	Theorems and examples of Cauchy-Corsa theorem and Cauchy's integral formulas	Lecture	Discussion and tests

14	4	Liouville's theorem, Moreira's theorem	Liouville's theorem, Moreira's theorem with some examples	Lecture	Discussion and tests
15	4	The average value theorem, Mean Value Theorem	The average value theorem of Chaos and also the basic theorem in algebra with its result and properties.	Lecture	Discussion and tests

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)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	