Academic Program Description Form

University Name: Diyala

Faculty/Institute: Engineering

Scientific Department: Materials engineering

Academic or Professional Program Name: Bachelor of Materials engineering

Final Certificate Name: Bachelor of Materials engineering

Academic System: course

Description Preparation Date: 24-6-2024

File Completion Date: 24-6-2024

Signature:

Head of Department Name:
Suha K. Shihab

Date: 25/6/2024

Signature:

Scientific Associate Name:
Jabbar Gaftmah

Date: 25/6/2024

The file is checked by: Salah N. Farhan

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 25/6/2024

Signature:

Approval of the Dean

Prof. Dr. Anees A. Khadom

Course: Numerical Analysis

1. Program Vision

To become creative pioneers in effective engineering education, scientific research and community service with a commitment to total quality and cooperation with various engineering authorities locally and internationally in our field of specialization and aspiration to lead in teaching materials engineering sciences.

2. Program Mission

Exerting efforts to build, train and qualify capabilities with high professionalism, conduct applied research, provide specialized advisory services in materials engineering sciences and fields, and provide advanced and accredited engineering education to meet the needs of departments and institutions.

3. Program Objectives

1- Preparing and qualifying engineers specialized in materials engineering sciences through diversification in learning and teaching methods and training students to apply the acquired knowledge and skills to solve real problems.
2- The department seeks to provide distinguished academic programs in the field of materials engineering sciences in both theoretical and applied aspects that comply with international standards of academic quality.
3- The department seeks to provide distinguished academic programs in the field of materials engineering sciences in both theoretical and applied aspects that comply with international standards of academic quality.
4- Providing a stimulating environment for faculty members to develop their educational and research capabilities and skills.
5- Providing students with the ability to self-learning , personal development and work in juvenile groups.

4. Program Accreditation

Is the program accredited by my programs? And from which side? All of it

5. Other external influences

Is there a sponsor for the program? All of it

6. Program				
ملاحظات *	النسبة المئوية	وحدة دراسية	عدد المقررات	هيكل البرنامج
	4.24 %	6	5	متطلبات المؤسسة
	14.20 %	20	9	متطلبات الكلية
				متطلبات القسم
Graduation Requirements	-	-	-	التدريب الصيفي
				أخرى

* ممكن ان تتضمن الملاحظات فيما اذا كان المقرر أساسي او اختياري .

7. Program Description				
Credit Hours		Course Name	Course Code	Year/Level
discussion	theoretical	Numerical analyses	Maeg 232	Third
1	2			

8. Expected Learning Outcomes of the Program	
	Knowledge
	1- Understanding and teaching the student general engineering concepts. 2- The ability to distinguish, identify, define, formulate and solve engineering problems through the application of the principles of engineering, science and mathematics. 3- Enabling students to obtain knowledge and understanding of other sciences. 4- Pushing towards scientific research outside the framework of the curriculum. 5- The ability to produce engineering designs that meet the required needs within certain constraints by applying both analysis and synthesis in the design process. 6- The ability to recognize the constant necessity for the growth of professional knowledge and how to find, evaluate, assemble and apply it correctly.
	Skills
	1 – The ability to think about addressing the problems that arise during the implementation of work. 2- The ability to keep pace with the development in engineering materials and implementation methods. 3- The ability to solve problems in the workplace in this field.

9. Teaching and learning strategies

1- ***Lecture Method - Provide students with the basics and additional topics related to the pre-skills learning outcomes to solve practical problems.***
2- ***Discussion method - Students are involved during the lecture by solving some practical problems.***
3- ***Education through collaboration between students.***
4- ***Education using electronic means.***
5- ***Education by brainstorming among students.***
6- ***Education using practical exercises.***

10. Evaluation methods

1- ***Daily exams with practical and scientific questions.***
2- ***Participation scores for challenging competition questions among students.***
3- ***Develop grades for homework assignments and assigned reports.***
4- ***Semester exams for the curriculum.***

11. Faculty

Faculty Members

Preparation of the	Special	Specialization	Academic Rank

teaching staff		requirements/skills if any			
lecturer	**angel**		**special**	**year**	

Professional Development
Orientation of new faculty members
In addition to passing the courses of teaching methods and language safety, the department works on development courses and workshops to prepare and guide new teaching members.
Professional development for faculty members
Using learning platforms and electronic methods to display lectures, seminars and reports, display educational videos and conduct lectures accompanied by practical application.

12. Acceptance Criterion

Central Admission

13. The most important sources of information about the program

Text

14. Program Development Plan

It is included the new formation of curricula and the creation of the Medical University Branch

مخطط مهارات البرنامج															
Learning outcomes required from the program															
القيم				المهارات				المعرفة				اساسي أم اختياري	Course Name	Course Code	Year/Level
4C	3C	2c	1C	4b	3b	2b	1b	A4	A 3	A 2	A 1				
√	√	√	√	√	√	√	√	√	√	√	√	Essential	Numerical analyses	Maeg 232	Third / Chapter One

- **Please tick the boxes corresponding to the individual learning outcomes from the program subject to evaluation**

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Course Description Form

1. Course Title:
Numerical analyses
2. Course Code:
Maeg 232
3. Semester / Year
II. III
4. Date of preparation of the description
23/6/2024
5. Available attendance formats
Came
6. Number of Hours (Total) / Number of Units (Total)
45/2
7. Name of the course administrator (if more than one name is mentioned) –
Name: Dr. Ali Nazem Jabara Email:alinadhimj@uodiyala.edu.iq
8. Course Objectives

• General and qualifying skills transferred (other skills related to employability and personal development). • Application of mathematical skills in practical problems • Skills in oral and written communication, use of information and communicate effectively. • Control time, resources and teamwork. • Design ability and practical in analyzing problems and extracting information from published sources	Course Objectives

9. Teaching and Learning Strategies	
✓ Lecture method - the teacher gives detailed lectures ✓ Discussion method.	Strategy

10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	Week
Theoretical exam and homework	Theoretical lecture and discussion	Error analysis	Error definition and analysis	3	First
Theoretical exam and homework	Theoretical lecture and discussion	Roots of nonlinear algebraic equations	The student learns to know the solution of nonlinear equations	3	Second
Theoretical exam and homework	Theoretical lecture and discussion	Roots of nonlinear algebraic equations	The student learns to know the solution of nonlinear equations	3	Third
Theoretical exam and homework	Theoretical lecture and discussion	solution of linear and transcendental simultaneous equations	The student learns to know the solution of linear equations	3	Fourth
Theoretical exam and	Theoretical lecture and discussion	curve fitting	Learn about curve analysis methods	3	V

homework					
Theoretical exam and homework	Theoretical lecture and discussion	curve fitting	Learn about curve analysis methods	3	Sixth
Theoretical exam and homework	Theoretical lecture and discussion	Lagrange interpolation	Knowing the Lankering method	3	Seventh
Theoretical exam and homework	Theoretical lecture and discussion	Numerical integration and differentiation	Knowledge of numerical analysis in integration and calculus	3	Eighth
Theoretical exam and homework	Theoretical lecture and discussion	Numerical integration and differentiation	Knowledge of numerical analysis in integration and calculus	3	Ninth
Theoretical exam and homework	Theoretical lecture and discussion	Numerical integration and differentiation	Knowledge of numerical analysis in integration and calculus	3	X
Theoretical exam and homework	Theoretical lecture and discussion	Simpson rule 1/3	Understand the Simpson's method of integration	3	Eleventh
Theoretical exam and homework	Theoretical lecture and discussion	Trapezoidal rule	understand the trapezoidal method of integration	3	Twelfth
Theoretical exam and homework	Theoretical lecture and discussion	Ordinary differential equations.	Understand Numerical Methods in Partial Equations,	3	Thirteenth
Theoretical exam and homework	Theoretical lecture and discussion	Matrix and vector manipulation	understand the solution of matrices by numerical methods,	3	Fourteenth
Theoretical exam and homework	Theoretical lecture and discussion	Matrix and vector manipulation	understand the solution of matrices by numerical methods,	3	Fifteenth

11. Course Evaluation	
Daily preparation score and attendance5% Daily exam score 10% Monthly exam score 20% Seminar and reporting score 5%	
12. Learning and Teaching Resources	
	Required textbooks (methodology, if any)
Advanced Engineering Mathematics 10th	Main references (sources)

Edition	
	Recommended supporting books and references (journals, reports..)
	Electronic References, Websites