



Module (Course Syllabus) Catalogue

2023-2024

College/ Institute	Erbil Technical Engineering College	
Department	Civil Engineering	
Module Name	Mathematics II	
Module Code	MAT 302	
Degree	Technical Diploma <input type="checkbox"/>	Bachelor <input checked="" type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/>
		PhD <input type="checkbox"/>
Semester	3 rd	
Qualification	B.Sc.	
Scientific Title	Assistant Lecturer	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/>	Corequisite <input checked="" type="checkbox"/> Assisted <input type="checkbox"/>
Weekly hours	3 hrs	
Weekly hours (Theory)	(3)hr Class	()Total hrs Workload
Weekly hours (Practical)	()hr Class	()Total hrs Workload
Number of Weeks	14	
Lecturer (Theory)	Byad A. Ahmed	
E-Mail & Mobile NO.	Byad.ahmed@epu.edu.iq	
Lecturer (Practical)	N/A	
E-Mail & Mobile NO.	N/A	
Websites		

Course Book

Course Description	<p>Calculus, a branch of Mathematics, developed by Newton and Leibniz, deals with the study of the rate of change. Calculus Math is generally used in Mathematical models to obtain optimal solutions. It helps us to understand the changes between the values which are related by a function. Calculus Math mainly focused on some important topics such as differentiation, integration, limits, functions, and so on.</p> <p>Calculus Mathematics is broadly classified into two different such:</p> <ul style="list-style-type: none"> • Differential Calculus • Integral Calculus <p>Both the differential and integral calculus deals with the impact on the function of a slight change in the independent variable as it leads to zero. Both differential and integral calculus serves as a foundation for the higher branch of Mathematics known as “Analysis”. Calculus Mathematics plays a vital role in modern Physics as well as in science and technology.</p>				
Course objectives	To provide students an introduction to the fundamentals of calculus, and to make them learn the application of mathematics in real life problems and analysing the results.				
Student's obligation	<p>1- Attendance and participation in the lecture are mandatory and will be considered in the grading.</p> <p>2- Homework will be assigned periodically, and students are responsible to do homework on their own.</p> <p>3- There will be several quizzes during the academic year, not necessarily announced. The quiz contains the materials covered during each lecture in that day.</p>				
Required Learning Materials	Notebook, calculator, and textbook is optional.				
Evaluation	Task	Weight (Marks)	Due Week	Relevant Learning Outcome	
	Paper Review				
	Assignments	Homework	5%	3, 7	1,2
		Class Activity	5%	All	1,2
		Report	8%	5	1,2,3,4
		Seminar	8%	6	1,2,3,4
		Essay			
		Project			
	Quiz	10%	Every Lecture	1,2	
	Lab.				
	Midterm Exam	24%		1,2	
	Final Exam	40%		1,2,3,4	

	Total	100%		
Specific learning outcome:	1- Utilizing polar coordinate system. 2- Employing integration methods to find areas and volume. 3- Using Vectors and vector arithmetic. 4- Employing partial derivative methods. 5- How to deal with complex numbers.			
Course References:	- Engineering Mathematics, 5th Edition, John Bird 2007. - Higher Engineering Mathematics, 5th Edition, John Bird 2006. - Thomas's Calculus, 12th Edition George B. Thomas. - Schaum's Outline of Calculus			

Course topics (Theory)	Week	Learning Outcome
Polar, Cylindrical & Spherical Coordinates.	1	1,2
Vectors	2	1,3
Space Coordinates and Equations of Lines and Planes.	3	1,2
Function of two or more variables	4	1,2
Partial Derivatives	5	4
Total & Exact Differential	6	2
Multiple Integrals & Their Applications (Area & Volume)	7	5
Infinite and Power Series and Expansion of Functions by Power Series.	8	5
Complex Numbers and Variables.	9	1,2
Matrices & Their Operations	10	3
Numerical Integration & Determinate	11	1,3
First Order Differential Equation and their Applications	12	2,4
Second Order Differential Equation and their Applications	13	2,4
Higher Order Differential Equation and their Applications and Fourier series.	14	2,4

External Evaluator

As a lecturer I have reviewed the course book related to the subject of Mathematic II for second year, department of civil engineering, college of technical engineering, I found that the course book is comprehensive describing the aim and objectives of the subject. Moreover, it is covering all the required syllabus and contents of the course and describes satisfactorily the aspects related to the course.



Dr. Bahman Omar Taha
Ph.D. in Structural Engineering.