Course Unit Title	Calculus II
Course Unit Code	MAT 102
Type of Course Unit	Compulsory
Level of Course Unit	1ST Year
National Credits	4
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	1
Semester when the course unit is delivered	2
Course Coordinator	
Name of Lecturer (s)	Assoc. Prof. Dr. Cavit Atalar
Name of Assistant (s)	-
Mode of Delivery	Face to Face,
Language of Instruction	English
Prerequisites	MAT101
Recommended Optional Programme Components	

Course description:

Sequences and Infinite Series; The integral test, comparison test,geometric series , ratio test,alternating series.Power series,Taylor series. Parametric equations and Polar coordinates. Functions of several variables,limits,continuity,partial derivatives,chain rule,extrema of functions of several variables.Multible integrals:Double integrals,Area,volume,double integral in polar coordinates,surface area,triple integrals,spherical and cylindrical coordinates.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	Determine whether a sequence converges or diverges	1,2
2	Determine whether an infinite series converges or diverges	1,2
3	Find the radius of convergence of a power series and how to differentiate and integrate the power series and how to represent functions by power series	1, 2
4	Sketch a curve represented by parametric equations	1, 2
5	Find the arc length of a curve using the parametric curve	1, 2
6	Find the area of a region bounded by a polar graph and find the arc length of a polar graph	1,2
7	Sketch a graph, level curves and level surfaces.	1,2
8	Find the limit and determine continuity.	1,2
9	Find and use partial derivatives. To use Chain Rule.	1,2
10	Find absolute and relative extrema and learn how to solve an optimization problem.	1,2
11	To evaluate an iterated integral and find the area of a plane region and volume of a solid region	1,2
12	Write and evaluate double integrals in polar coordinates and find the area of a surface	1,2

13	Write and evaluate the triple integrals and use a triple integral to find the volume of a solid region.	1,2

Assessment Methods: 1. Written Exam, 2. Assignment

Course's Contribution to Program

		CL
1	Apply knowledge of mathematics, natural science with relevant to life science and multidisciplinary context of engineering science.	5
2	Analyze, design and conduct experiments, as well as to analyze and interpret data.	5
3	Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	1
4	Function on multidisciplinary teams.	2
5	Control in design work, by simulation, modeling and tests and integration in a problem solving oriented way.	1
6	Display an understanding of professional and ethical responsibility.	1
7	Communicate effectively aware of the non-technical effects of engineering.	1
8	Search technical literature and other information sources.	1
9	Recognize of the need for, and an ability to engage in life-long learning	1
10	Exhibit of knowledge of contemporary issues.	3
11	Use the techniques, skills and modern engineering tools necessary for engineering practice to develop marketable products for the global market.	1

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Exam
1	9	Infinite Series : Sequences, Infite Series and Convergence	
2,3	9	The Integral test and p-test, Comparisons of series	Quiz
4	9	Alternating Series , The Ratio and the Root tests	
5,6	9	Power Series, Representation of Functions by power series, Taylor Series	Quiz
7			Midterm
8	10	Parametric Equations And Polar Coordinates: Conics, Plane Curves and Parametric Equations , Polar Coordinates and its Graphs, Area and Arc Length in Polar	
9,10	13	Functions of Several Variables: Introduction to Functions of Several Variables, Limits.	
11	13	Derivatives, Chain Rules, extreme of Functions of Two variables	
12	14	Multiple Integration: Iterated Integrals and Area in the plane	Quiz
13	14	Double integrals and Volume, Surface Area	
14	14	Triple integrals and Applications	Quiz
15	14	Triple Integrals in Cylindrical and Spherical Coordinates	
16			Final

Recommended Sources

Textbook:
CALCULUS, Early Transcendental Functions Ron Larsaon, Bruce H.Edwards 5rd.edition, 2011

Supplementary Course Material

1- Early Transcendental Functions Robert Smith, Roland Minton 3rd.edition, 2007
2- CALCULUS 7th edition Robert A.ADAMS , Christopher Essex 2010

Assessment

Attendance & Assignment	15%	
Midterm Exam	30%	Written Exam
Quizes	10%	
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

1. Attendance to the course is mandatory.
2. Late assignments will not be accepted unless an agreement is reached with the lecturer.
3. Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	4	64
Labs and Tutorials	-	-	-
Assignment	3	3	9
Project/Presentation/Report	-	-	-
E-learning activities	-	-	-
Quizzes	2	3	6
Midterm Examination	1	15	15
Final Examination	1	15	15
Self Study	14	4	56
Total Workload			165

Total Workload/30(h)	5.5
ECTS Credit of the Course	6