Course Title: MAT 238 Calculus III

Term: Winter 2023

Instructor: TBA

Course Credit: 4

Mode of Instruction: Online

Course Description:

This course is the third and the final part of our three-semester calculus sequence. The distinct feature of this part of the course is its focus on the multi-dimensional analysis and several theorems. Topics cover vector functions and multidimensional calculus; partial derivatives, gradients, optimization, multiple integrals, parametric curves and surfaces, vector calculus, line integrals, flux integral, and vector fields. The theorems of Green, Gauss and Stokes will be also discussed. Students will be able to transfer the use of concepts, functions and skills learned in a given context to solve problems in real life.

Course Prerequisites:

MAT 137 Calculus II

Learning Outcomes:

By the end of the course, the student should be able to:

A. Have a thorough and rigorous understanding of calculus;

B. Be familiar with the major theorems of calculons of lines and planes in three-dimensional space;

C. Use various technical ideas to evaluate double integrals and triple integrals

D. Exhibit fluency in differentiation by identifying and applying standard techniques for evaluating derivatives.

Course Material:

Geveci, Tunc, ***Calculus III***, Publisher: Cognella, Year: 2011

Evaluation:

- Quizzes [20%]
- Assignments [20%]
- Mid-term Exam [25%]
- Final Exam [35%]

Description of the Evaluation tasks:

Assignment/ Essay/ ... : During the term, students will be required to finish several evaluation tasks within due date. All the tasks are linked with specific course topics/ outcomes and will adequately assess students' competence and learning outcomes. Students are encouraged to meet with instructor about these tasks at any point.

Mid- term/ Final Exams/ Quiz/. . . : There may be periodic quizzes given at the beginning of lecture sessions; the feedback from these quizzes will monitor the progress of the learners and help to set learning priorities. There will be mid- term exam/ final exam for the course. They are the basic criteria for the evaluation of students' learning outcomes and final grade.

Grading Policy:

Students are supposed to finish each online lecture. Prior to each class, students should finish the required readings. During the class time, students are encouraged to make use of all relevant online course resources and communicate with the instructor. Students' grades are accumulated based on the cumulative evaluations.

Students' letter grade will be assigned according to the following scale:

A+ 90- 100	A 85-89	A- 80-84
B+ 77-79	B 73-76	B- 70-72
C+ 67-69	C 63-66	C- 60-62
D+ 57-59	D 53-56	D- 50-52
F < 50		

Academic Integrity:

Students must strictly adhere to the university' s academic integrity rule; and all essays, exams and any other form of academic assignments must adhere to these rules. Any form of plagiarism, cheating, or misappropriation of materials will be considered a violation of academic integrity and will be punishable by the university.

Withdrawal from the Course(s):

Students will be able to apply for a transfer or withdrawal within 3 days of the starting date of the course. If a withdrawal is applied for within 3 working days, the tuition fee will be fully refunded. After 3 days, the tuition fee will not be refunded. If a withdrawal is applied for in the first two weeks, it will be recorded as W (Withdraw) on the course transcript. After this initial two-week period, the class will be recorded as F (Fail).

Tentative Schedule:

Week 1	
1	Vectors
2	Cartesian Coordinates in 3D and Surfaces
3	Vectors in Two and Three Dimensions
4	The Dot Product The Cross Product
5	Functions of Several Variables **Assignment 1**
Week 2	
6	Partial Derivatives
7	Linear Approximations and the Differential
8	Multiple Integrals
9	Double Integrals over Rectangles
10	Double Integrals in Polar Coordinates **Quiz 1**

Week 3

11	Applications of Double Integrals
12	**Midterm Test**
13	Triple Integrals
14	Change of Variables in Multiple Integrals
15	Vector Analysis **Assignment 2**

Week 4

16	Vector Fields, Divergence and Curl
17	Line Integrals
18	Line Integrals of Conservative Vector Fields
19	Parametrized Surfaces and Tangent Planes
20	Surface Integrals **Quiz 2**

Week 5

21	Green's Theorem
22	Stokes' Theorem
23	Gauss' Theorem
24	Final Exam Review
25	**Final Exam**