Course Title: MAT 238 Calculus III

Term: Fall 2022

Instructor: TBA

Course Credit: 4

Mode of Instruction: Online

Course Description:

Continuing the study of calculus on the functions of several variables, this course proposes an in- depth and rigorous discussion of the fundamental tools of real analysis and calculus, such as limits, sequences, continuity and differentiation of functions. Topics also include Inverse Functions and logarithms, Taylor's Theorem, extreme values, optimization problems, introduction to Fourier series. 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 136 Calculus I; 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 elementary calculus.

B. Be familiar with the major theorems of calculus and how to present and process data in a sound and ethical way.

C. Understand the logical relationships between real and complex numbers, series and sequences of numbers and functions, limits and continuity, derivatives and integrals.

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

E. Possess analytical skills and conceptual understanding in core areas of mathematics.

Course Material:

J. Stewart, *Essential Calculus: Early Transcendentals*, International Metric Edition, Brooks Cole/Cengage Learning, 2013.

Evaluation:

- Quizzes [30%]
- Mid-term Exam [30%]
- Final Exam [40%]

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	Course Introduction
2	A Catalog of Essential Functions
3	The Limit of a Function
4	Calculating Limits
5	Continuity **Quiz# 1**

Week 2

6	Limits Involving Infinity
7	Derivatives and Rates of Change

8	The Mean Value Theorem
9	Basic Differentiation Formulas
10	**Midterm Test**

Week 3

11	Implicit Differentiation
12	Derivatives and the Shapes of Graphs
13	Linear Approximations and Differentials
14	Inverse Functions and Logarithms
15	Optimization Problems

Week 4

16	Extreme Values
17	Taylor' s Theorem
18	Introduction to Fourier Series
19	Maximum and Minimum Values
20	Green' s Theorem **Quiz# 2**

Week 5

21	Surface Integrals
22	Stokes' Theorem
23	The Divergence Theorem
24	Final Exam Reviews
25	**Final Exam**