NAU NORTHERN ARIZONA UNIVERSITY

Course Title: MAT 136 Calculus I

Term: Summer 2023

Instructor: TBA

Course Credit: 4

Mode of Instruction: Online

Course Description:

The course aims to introduce calculus of one variable; basic concepts, interpretations, techniques, and applications of differentiation and integration. This is the first course in the calculus sequence for physical science, business, computer science, mathematics and engineering students. Topics covered include continuity, derivatives and rates of change, definite and indefinite integrals and the net change theorem, applications of integration including area between curves and volumes and so on.

Course Prerequisites:

N/A

Learning Outcomes:

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

A. Explain the basic concepts of calculus, including limit, continuity, derivatives of algebraic and trigonometric function;

B. Compute the limits of functions at a point or at infinity using methods of algebra, limit laws, and related concepts;

C. Explain the role of limits in the definition of derivatives and integrals, and how the ideas of continuity, differentiability, and integrability are related to one another;

D. Construct and analyze mathematical models of real-world phenomena, including both discrete and continuous models

Course Material:

Single Variable Calculus: Early Transcendentals, James Stewart, 8th Edition.

Evaluation:

- 2 Assignments [2*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:

1	Course Introduction
2	Functions and Models
3	The Limit of a Function; Continuity
4	Derivatives and Rates of Change
5	Derivatives and Rates of Change (Cont.)
6	Differentiation Rules **Assignment #1**
7	Applications of Differentiation
8	Applications of Differentiation (Cont.)
9	The Definite Integral
10	Review for Midterm and Question Sessions (*Zoom Meeting*)

11	**Midterm Test**
12	Indefinite Integrals and the Net Change Theorem
13	Applications of Integration (Areas Between Curves; Volumes)
14	Techniques of Integration
15	Techniques of Integration (Cont.)
16	Further Applications of Integration
17	Modeling with Differential Equations
18	Separable Equations
19	Curves Defined by Parametric Equations
20	Calculus with Parametric Curves **Assignment #2**
21	Polar Coordinates
22	Areas and Lengths in Polar Coordinates
23	Infinite Sequences and Series
24	Final Exam Reviews; Question Sessions (*Zoom Meeting*)
25	**Final Exam**