

Syllabus, Spring 2025

MA 227-6B-Calculus-III

(Location: HHB 221, Time: 10:10 am-12:00 pm MW)

Instructor Information:

Name: Dr. Muhammad “Jaman” Mohebujjaman

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Office: UH 4045

Office Phone: 205-934-2195

Office Hours: Tuesdays and Thursdays: 11:00 am-12:00 pm or by appointment.

Preferred Methods of Contact: Email is the preferred method of contact if you have questions. Please expect a response within 24 hours on weekdays and a slower response on weekends (or emails received after 5 pm on Friday will be returned Monday morning). Include the course name and number in the subject line of your email for a faster response.

Course Material:

Text: Essential Calculus, Second Edition by James Stewart, Thomson Brooks/Cole, 2013 with WebAssign access

WebAssign Class Key: uab 7498 1634

Course Description, Objectives and Prerequisite:

Vector functions, functions of two or more variables, partial derivatives, quadric surfaces, multiple integration and vector calculus, including Greens Theorem, curl and divergence, surface integrals, and Gauss' and Stokes' Theorem.

This course aims to extend the calculus concepts applied to single variable functions to multi variables functions.

Prerequisites: MA 126 [Min Grade: C] or MA 226 [Min Grade: C]

Student Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- use the concepts of continuity, differentiation, and integration of vector-valued functions to determine unit tangent and unit normal vectors in the process of modeling objects in three dimensions;
- compute the curvature and torsion of a curve in space;

- calculate and sketch level curves and level surfaces for functions of several variables and sketch the graphs of functions of two variables;
- compute limits, determine continuity, and compute partial derivatives of multi variables functions;
- use tangent planes, directional derivatives, gradients, the second partials test, and Lagrange multipliers to approximate functions and solve optimization problems;
- demonstrate techniques of computation of multiple integral and compute iterated integrals over planar regions involving change of coordinate systems;
- apply multiple integrals to solve problems involving area, volume, surface area, center of mass, and moments of inertia;
- compute line integrals and surface integrals by applying The Fundamental Theorem for line integrals, Green's theorem, Stoke's Theorem and the Divergence Theorem, and applying these techniques to solve application problems such as work problems.

Grading:

The final grade will be a weighted average and will be calculated as below:

Homework: 10%, **Web Assign Homework:** 10%, **In-class Quiz:** 10%, **Exam I:** 25%
Exam II: 20% **Final Exam (comprehensive):** 25%

Homework Policy:

Homework assignments will be available under the 'Files' folder in Canvas and are expected to be submitted as a single PDF workout into Canvas. Web Assign Homeworks will be given online in <https://www.webassign.net/>

Grading Scale:

A: [90, 100]; B: [80, 90); C:[70, 80); D:[60, 70), F:[0, 60)

Tentative Exam Dates:

Exam 1: Wednesday, 12/02/2025, **Exam 2:** Monday, 24/03/2025, **Final Exam:** Friday 05/02/2025.

Make-Up Exams:

There will be NO make-up exams except for the observance of a religious holiday or for an official university absence.

General Course Policies

- No cell phones or other electronic devices will be allowed on your person during quizzes or exams.
- Be respectful of yourself, and others in the course.
- While explaining, you should not talk to anyone in class except me.
- Feel free to ask me any questions in class or outside of class.

Classroom Attendance Rule

Students are expected to attend all the classes unless they have a valid acceptable excuse.