MATH 2551 Multivariable Calculus
Lecture 1 & 2

Summer 2026

1. Course Information

Course Title: Multivariable Calculus

Lecture Meeting Times:
Lecture Room: CentraleSuperlec Building, Room F001.
Lecture 1 on MW 8:00 - 9:55 am;
Lecture 2 on MW 1:30 - 3:25 pm.

Studio	Time	Room	Teaching Assistant
Lecture 1	TTh 8:45-10:00 am	CentraleSuperlec F001	TBA
Lecture 2	TTh 1:30- 2:45 pm	CentraleSuperlec F001	TBA

1.1 Course Content
Math 2551 is an introduction to multivariable calculus. Topics include:

- Vectors and the geometry of space, vector calculus, parametric curves and motion

- Functions of several variables, visualization and partial differentiation, gradients, linear approximation, tangent planes, differentials, optimization, Lagrange multipliers

- Double and triple integrals, applications

- Vector analysis including curve integrals, surface integrals, and the theorems of Green, Gauss, and Stokes.

1.2 Learning Outcomes
The primary goal of Math 2551 is to prepare students to succeed in upper level courses that require this course as a pre-requisite. Upon successful completion of the course, students will be able to:

- Describe three-dimensional vectors, surfaces, and multivariable functions geometrically.

- Analyze vector-valued functions using calculus to characterize motion and paths in two and three dimensions.

- Calculate and interpret derivatives of multivariable functions to describe and estimate how such functions change.

- Analyze and solve multivariable optimization problems.

- Construct and evaluate integrals of multivariable functions using Cartesian and other coordinate systems.

- Construct and evaluate integrals of scalar and vector functions over curves and surfaces using the theorems of Green, Gauss, and Stokes

- Apply these integrals and theorems to model physical quantities such as flux and circulation.

- Contextualize mathematical quantities involving multivariable functions to interpret their meaning within problems that arise in everyday life or to give a geometric interpretation of them.

2. Instructor and TA Contact Information

Instructor: Prof. Ronghua Pan, Teaching at GT since 2003.
Instructor Office: TBA
Instructor Email: panrh@math.gatech.edu.
Instructor Office Hours: TBA
If none of these office hours are possible for you, let me know via email and we can arrange some other time to meet.

TA Contact Info: TBA

3. Pre-Requisites

- Calculus I & II: Differential and integral Calculus of one variable. At least one of MATH 1555, MATH 1552, MATH 15X2, MATH 1X52

- Linear Algebra: At least one of MATH 1553, MATH 1554, MATH 1564, MATH 1X53, MATH 1X54

4. Textbook

Thomas, Calculus: Early Transcendentals 15th edition by Addison-Wesley (Pearson). The textbook is not required for the class; many good references for the material of MATH 2551 can be found online or at the campus library.

A few online resources are listed below in no particular order:

- OpenStax Multivariable Calculus

- APEX Calculus

- Active Calculus - Vector Calculus

- Diana Davis' Multivariable Calculus

- Paul's Online Notes

- Khan Academy Multivariable Calculus

5. Course Websites

Canvas Page: gatech.instructure.com
Canvas will be used for the course website including all course materials, course grades, announcements, accessing WeBWorK, and signing up for Gradescope/Piazza.
Links to the other websites in this section can be found on Canvas as well.