SCUPI – Math0240 Analytic Geometry and Calculus 3-Section 1
Spring Semester, 2025

INSTRUCTOR: Zheng Yang **OFFICE:** SCUPI N517 **EMAIL:** zhengyang2018@scu.edu.cn
TA: Yihang Yang (IE), email: 2021141520201@stu.scu.edu.cn

QQ group: 638268041
TA Recitation Hours: Friday 1:50 pm – 3:35 pm at SCUPI building S105
OFFICE HOURS: Tuesday 2 pm – 6 pm, Other times by appointments

LECTURES: Monday 4:25 pm – 5:10 pm, 5:20 pm – 6:05 pm, Jiangan South Campus S103
Wednesday 4:25 pm – 5:10 pm, 5:20 pm – 6:05 pm, Jiangan South Campus S103
CREDITS: 4 credit hours

REQUIRED TEXTBOOK: *James Stewart et.al: Calculus, Early Transcendentals 9th ed. Metric Edition*
Reference book: *Briggs, Cochran, Lyle: Calculus, Early Transcendentals 2nd ed*
James Stewart, Essential Calculus, 2nd edition, International Metric Edition
DESCRIPTION: This is the third in a sequence of three calculus courses for science and Engineering students in SCUPI. **We cover most of Chapters 14, 15 and 16.** The goal is to prepare you to make use of calculus as a practical problem-solving tool.
COURSE OBJECTIVES: We motivate the essential ideas of calculus and demonstrate the utility of calculus with applications in diverse fields. We introduce each topic through many examples, applications and analogies, appealing to students' intuition and geometric instincts to make calculus natural and believable. We present generalizations and abstractions after the intuitive foundation is established.

LEARNING OUTCOMES FOR THIS COURSE:

1) Students will learn about functions of two or more variables.
2) Students will learn how to sketch simple surfaces.
3) Students will learn partial derivatives and find maxima and minima points.
4) Students will learn about scalar and vector fields and how physical quantities can be represented by such fields.
5) Students will be able to evaluate various derivatives (gradient, divergence, curl) for given fields.
6) Students will learn how to integrate functions involving vectors.
7) Students will be able to evaluate line integrals, surface and volume integrals where a function involving vectors is summed over a surface or volume.
8) Students will learn about some theorems relating to line, surface or volume integrals viz Stokes' theorem, Gauss' divergence theorem and Green's theorem.
9) Students will learn to integrate a function of two variables over various rectangular and non-rectangular areas, a function of three variables over a volume, and for various other coordinate systems.

GRADE: The final grade will be based on the **score**. The score is a number determined by

Homework: 10% Attendance: 5% Quizzes: 15% Project: 20% Exam: 20% Final Exam: 30%

The final letter grade is determined from the following table.

A: 90 – 100	A−: 85 – 89	B+: 80 – 84	B: 76 – 79	B−: 73 – 75	
C+: 70 – 72	C: 66 – 69	C−: 63 – 65	D+: 61 – 62	D: 60	F: < 60

HOMEWORK: There will be a suggested homework assignment given on each section covered.
I recommend you work through many Examples and their associated exercises of the book. Make sure you provide detailed steps for each problem that you attempt. The homework will be graded for the selected problems based on your honest efforts. You may meet with TAs to go over problems related to the material covered in the previous lectures. Please also read the "**Requirements of HW Submission**" for details.

QUIZZES: There will be many quizzes given during recitations. I may also collect your solved exercises as quiz problems. In general, quiz and exam problems will be modeled on the homework problems. Your lowest quiz score maybe dropped at end.

EXAMS: There is a 120 minutes, closed book/notes, major tests and a final exam. Tentative Dates are given in the table below. Each major test will be cumulative with more emphasis on the material since the previous test. The final exam will be comprehensive. **There is NO Make up for all quizzes and exams.**

Tentative exam dates are the following:

TEST 1: after Chapter 14	**PROJECT**	**FINAL: Comprehensive**

PROJECT: You are asked to work as a group of 4-5 students for a final project. The detailed instructions and deadlines of the project will follow up. The project will be graded based on a PPT presentation (written report) and your overall efforts.

ATTENDANCE: You are expected to attend all the classes. A student who misses a class is responsible for finding out what was covered in the class. Note that you will also miss more "unexpected" points for being absent since I will likely provide a quiz or collect homework during your absence. You will also lose "surprised" bonus for being absent since I may assign problems during class. **Remember there are no make ups for all grades related activities. Missing three classes in a row may result an F for the course!!!**

CLASSROOM RULES: Electronic devices including but not limited to iphone, smartphone, ipod, ipad, pc are NOT allowed, except for course work.

CODE OF ACADEMIC CONDUCT: All students in attendance at the SiChuan University are expected to be honorable and to observe standards of conduct appropriate to a community of scholars. The University expects from its students a higher standard of conduct than the minimum required to avoid discipline. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student. The Academic Misconduct Disciplinary Policy will be followed in the event of academic misconduct.

NON-ACADEMIC MISCONDUCT: All cell phones and other electronic devices are to be turned off and out of sight while you are in the classroom. All newspapers and other materials not related to the class are to be put away once class begins. Operating these devices and reading unrelated materials while in class is disrespectful of your instructor and fellow classmates. If you fail to abide by this rule, the instructor has the right to confiscate the device or materials. If you have an emergency and need to have your phone turned on during class, ask your instructor for permission

MATERIAL COVERED: Tentative sequence of the sections covered in this class is:

Week	Chapter/Section	Topics
1	14.1 – 11.2	• Functions of several variables • Limits and continuities Sections
2	14.3 – 14.4	• Partial derivatives • The tangent plane and linear approximation
3	14.5	• Chain rule and it's Applications
4	14.6	• Directional derivatives and the gradient vector
5		National Holiday Week
6	14.7	• Maximum and minimum values
7	14.8	• Lagrange multipliers
8	15.1 – 15.2	• Double integrals over rectangular regions
9	15.3 – 15.4	• Double integrals over general regions
10	15.5	• Double integrals in polar coordinates
11	15.6	• Triple integrals • Triple integrals in cylindrical coordinates
12	15.7 – 15.8	• Triple integrals in spherical coordinates • Change of variables in multiple integrals
13	16.1 – 16.2	• Vector fields • Line integrals
14	16.3 – 16.4	• The fundamental theorem for line integrals • Green's Theorem
15	16.5 – 16.6	• Curl and divergence • Parametric surfaces and their area
16	16.7	• Surface integrals
17	16.8 – 16.9	• Stoke's theorem • Divergence theorem
18		**Final Exam Week**