SCUPI – Math0230 Analytic Geometry and Calculus 2
Fall Semester, 2024, Section 1

INSTRUCTOR: Zheng Yang; **OFFICE:** SCUPI building N517; **EMAIL:** zhengyang2018@scu.edu.cn
TA: Qihang He (IE) 2021141520149@stu.scu.edu.cn

QQ group: 714785626
Recitation hours: TBA
OFFICE HOURS: Tuesday & Thursday 2 pm – 4 pm, Other times by appointments

LECTURES: Tuesday & Thursday 4:45 pm – 5:30 pm, 5:40 pm – 6:25 pm, Room 3-101
CREDITS: 4 credit hours

TEXTBOOK: *James Stewart, Essential Calculus, 2nd edition.*
DESCRIPTION: This is the second part of calculus sequence for students in SCUPI. Topics are mainly focus on single variable calculus which include a review of limits and differential calculus, applications of integration (such as finding volume of solid of revolution, curve length, surface area), integration techniques, improper integrals, infinite series, convergence tests for series, power series and applications and Taylor series. **We will focus on Chapters 6, 7 and 8. Many topics from Chapters 9 and 10 will also be covered.**

COURSE OBJECTIVES: Students will acquire basic skills needed to apply integration techniques to solve a wide range of integration problems. Students will develop a basic understanding of infinite series, power series, Taylor series, and their applications. Evaluation of students will be determined by in-class presentation, group work, quizzes, homework and tests.
LEARNING OUTCOMES FOR THIS COURSE:

1) Students will develop a basic understanding of two and three-dimensional vectors, the geometry of the three-dimensional space, equations of lines and planes in three dimensions, and be able to apply these concepts when working applied problems.
2) Students will learn various techniques of integration.
3) Students will be able to apply integration techniques to solve a range of applied problems, including volume problems and applications from physics and other disciplines.
4) Students will develop a basic understanding of infinite series and their applications.
5) Students will be able to determine convergence or divergence of various series.
6) Students will develop a basic understanding of Taylor series and the usage of Taylor series

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

Homework: 15% Quizzes: 15% In-class work: 5% Major Exams: 40% Final Exam: 25%

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

EXAMS: There are two 120 minutes 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 the quizzes and exams.**

Tentative exam dates are roughly the following:

TEST 1: Chapters 6, 7	**TEST 2: Chapters 8**	**Final Exam: comprehensive**

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.

HOMEWORK: There will be a suggested homework assignment given on each section covered. You should prepare a thick notebook for doing the homework problems. I recommend you **work through all Examples and their associated exercises in Basic Skills 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 will meet with TA to go over problems related to the material covered in the previous lectures.

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.**

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	Contents	Descriptions
1	6.1 – 6.2	Integration by Parts, Trigonometric Integral and Substitutions
2	6.2 – 6.3	Trigonometric Integral and Substitutions, Partial Fractions
3	6.6	Improper Integrals
4	7.1 – 7.2	Areas between Curves, Volumes
5	7.3 – 7.4	Volumes by Cylindrical Shells, Arc Length
6	7.5 – 7.6	Area of a Surface of Revolution, Applications to Physics and Engineering
7	7.6 – 7.7	Applications to Physics and Engineering, Differential Equations
8	8.1 – 8.2	Sequences, Series
9	8.3 – 8.4	Integral and Comparison Tests, Other Convergence Tests
10	8.4 – 8.5	Other Convergence Tests, Power Series
11	8.6	Representing Functions as Power Series
12	8.7	Taylor & Maclaurin Series
13	9.1 – 9.2	Parametric Curves, Calculus with Parametric Curves
14	9.3 – 9.4	Polar Coordinates, Areas and Lengths in Polar Coordinates
15	10.6 – 10.7	Cylinders and Quadratic Surfaces, Vector Functions & Space Curves
16	10.8	Arc Length and Curvature
17	10.9	Motion in Space and Acceleration
18		Final's Week