SCUPI – Math220 - Calculus I
Fall Semester, 2023, Section 3

INSTRUCTOR: Dr. Tsun-Zee Mai; **OFFICE:** Rm4-224; **EMAIL:** tmai@scupi.cn
OFFICE HOURS: Tue, Wed, Thu, Fri 10:30 – 11:50am & Tue, Wed : 2:00 – 4:00pm at Rm224, or by appointment.
LECTURES: Tue, Fri: 8:15 – 9:55am at Teaching Building 1 A101.
RECITATION: 杨艺航, 林文艺: Wed 12:45pm -13:30pm at 3-103; Thu 12:45pm – 13:30pm at 4-201
TEXTBOOK: *James Stewart: Essential Calculus 2nd ed.*

DESCRIPTION: This is the first course in the three-part basic calculus sequence for SCUPI students. Topics include limits, continuity, differentiation, applications of differentiation, and integration. Applications of the derivative are covered in detail, including approximations of errors using differentials, maxima and minima problems, curve sketching, optimization problems, and Newton's Method. Topics on integration include Riemann sums, properties of definite integrals, integration by substitution, and integrals involving logarithmic, exponential, trigonometric, inverse trigonometric, and hyperbolic functions. Brief introduction of vectors will also be covered.

COURSE OBJECTIVES Students will develop a basic understanding of the concepts of calculus including limits, continuity, differentiation, and integration. Students will be able to find limits by definition as well as by techniques, calculate (and simplify) derivatives and integrals involving exponential, trigonometric, inverse trigonometric, and hyperbolic functions. Students will be able to apply the concepts and techniques of calculus to solve applied problems. Students will understand basic operations of vectors such as norms, dot product, and cross product. Evaluation of students will be determined by tests/quizzes.

LEARNING OUTCOMES FOR THIS COURSE:

1) Students will develop a basic understanding that derivative and integration are derived from limits.
2) Students will master the Fundamental Theorem of Calculus.
3) Students will be able to apply differentiation techniques to solve a range of applied problems, including related rates and optimization problems.
4) Students will develop a basic understanding of the operations of vectors.

GRADE: The final grade will be based on the **score**. The score is a number determined by
Homework: 5% Quizzes: 15% Major Exams: 50% Final Exam: 30%
The final letter grade is determined from the following table.

A: 90 – 100	A−: 85 – 90	B+: 80 – 85	B: 76 – 80	B−: 73 – 76
C+: 70 – 73	C: 66 - 70	C−: 63 - 66	D: 60 – 63	F: < 60

EXAMS: There are three 90 minutes major tests and a final exam. Dates are given in the table below. Each major test will be cumulative with more emphasis on the material since the previous test. The lowest test grade will be replaced by the final exam score if the final exam score is higher. Here is an example: if a student's grades are: quiz average (80), homework average (85), tests (70, 85, 80), and final (78), Thus the student grade determination is 80×15% + 85×5% + (78+85+80)/3×50% + 78×30% = 80.15, which is a B+. The final exam will be comprehensive. There is **NO Make up for all the quizzes and exams**.

Tentative exam dates are the following:

TEST 1: The 7th week of class (10/16)	TEST 2: The 12th week of class (11/20)
TEST 3: The 17th week of class (12/25)	FINAL: TBD

QUIZZES: In-class 10-15 minutes quiz will be given on some lecture and recitation days. No makeup quiz will be given; however, your top 10 quizzes scores will be averaged for your quiz grade.

GRADE REBUTTAL: You must receive your own test or quiz paper. For any test or quiz, you have only one week to request correction if you feel your answer is mis-graded. **No correction will be made after a week when the test paper is returned**.

HOMEWORK: There will be a graded homework assignment given on each section covered. They must be handed in before due date. **No late homework will be accepted**. Your TA will collect them and grade some problems. Homework solutions will be provided after the due date.

ATTENDANCE: You are expected to attend all the classes; however, I will not check the attendance. A student who misses a class is responsible for finding out what was covered in the class. Remember there are no make ups all grades related activities.

MAKE-UP POLICY: No makeup work or tests will be allowed.

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: The sequence of the sections covered in this class is:

Week	Contents	Descriptions
3 (09/18)	10.1 – 10.3	The Dot Product, The Cross Product
4 (09/25)	10.4 – 10.5	The Dot Product, The Cross Product
5 (10/02)	1.1 – 1.3	Functions and Their Representations. The Limit of a Function
6 (10/09)	1.4 – 1.5	Calculating Limits, Continuity
7 (10/16)	1.6 – 2.1	Limits Involving Infinity, Derivatives and Rates of Change
10/21	Test 1	Exam 1 on 10/21, 1:30 – 3:30pm
8 (10/23)	2.2 – 2.4	Derivatives and Rates of Change, Basic Differentiation Formulas
9 (10/30)	2.4 – 2.6	Product & Quotient Rules, Chain Rule, Implicit Differentiation
10 (11/06)	2.6 – 2.8	Implicit Differentiation, Related Rates, Linear Appro & Differentials
11 (11/13)	2.8 – 3.1	Linear Approximations & Differentials, Maximum and Minimum Values
12 (11/20)	3.1 – 3.4	The Mean Value Theorem, Derivatives and Shapes of Graphs
11/25	Test 2	Exam 2 on 11/25, 1:30 – 3:30pm
13 (11/27)	3.7 – 4.1	Antiderivatives, Areas and Distances
14 (12/04)	4.1 – 4.2	Areas and Distances, The Definite Integral
15 (12/11)	4.3 – 4.4	Evaluating Definite Integrals, The Fundamental Theorem of Calculus
16 (12/18)	4.5, 5.1	The Substitution Rule Inverse Functions
17 (12/25)	5.2 – 5.3	The Natural Logarithmic and Exponential Functions.
12/30	Test 3	Exam 3 on 12/30, 1:30 – 3:30pm
18 (01/01)	5.6, 5.8	Inverse Trigonometric Functions, Indeterminate Forms & L'Hospital's
19 (01/08)		Final Exam Week
20 (01/15)		Final Exam Week