SCUPI – Math220 - Calculus I
Fall Semester, 2022, Section 2

INSTRUCTOR: Dr. Tsun-Zee Mai; **OFFICE:** Rm4-224; **EMAIL:** tmai@scupi.cn
OFFICE HOURS: Tue, Wed, Thu 10:00 – 11:50am & Tue, Wed : 2:00 – 4:00pm at Rm224, or by appointment.
LECTURES: Mon,Wed: 8:15 – 9:55am at Rm3-102.
RECITATION: To Be Determined
TEXTBOOK: *James Stewart: Essential Calculus 2nd ed.*

DESCRIPTION: This is the first course in the three part basic calculus sequence for students SCUPI. 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. Also brief introduction of vectors.

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 and in-class work: 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. 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% + (70+85+80)/3×50% + 78×30% = 78.82, 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 (10/14)	TEST 2: The 12th week of class (11/18)
TEST 3: The 17th week of class (12/23)	FINAL: TBD

QUIZZES: In-class 10-15 minutes quiz will be given on some lecture and recitation days.
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 (09/12)	1.1 – 1.3	Functions and Their Representations. The Limit of a Function
4 (09/19)	1.4 – 1.5	Calculating Limits, Continuity
5 (09/26)	1.6 – 2.1	Limits Involving Infinity, Derivatives and Rates of Change
6 (10/03)	2.2 – 2.3	The Derivative as a Function, Basic Differentiation Formulas
7 (10/10)	2.4 – 2.5	Product & Quotient Rules, Chain Rule, Exam 1 on 10/14 1:30 – 3:00pm
8 (10/17)	2.6 – 2.7	Implicit Differentiation, Related Rates
9 (10/24)	2.8 – 3.1	Linear Approximations & Differentials, Maximum and Minimum Values
10 (10/31)	3.2 – 3.3	The Mean Value Theorem, Derivatives and Shapes of Graphs
11 (11/07)	3.4 – 3.5	Curve Sketching, Optimization Problems.
12 (11/14)	3.6 – 3.7	Newton's Method, Antiderivatives Exam2 on 11/18 1:30 – 3:00pm
13 (11/21)	4.1 – 4.2	Areas and Distances, The Definite Integral
14 (11/28)	4.3 – 4.4	Evaluating Definite Integrals, The Fundamental Theorem of Calculus
15 (12/05)	4.5, 5.1	The Substitution Rule Inverse Functions
16 (12/12)	5.2 – 5.3	The Natural Logarithmic and Exponential Functions.
17 (12/19)	5.4 – 5.5	General Logarithmic and Exponential Functions, Exam 3 on 12/23
18 (12/26)	5.6, 5.8	Inverse Trigonometric Functions, Indeterminate Forms & L'Hospital's
19 (01/02)	10.1 – 10.4 intro	The Dot Product, The Cross Product
20 (01/09)		Final Exam Week