MAT 110 Calculus I

Summer 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

Calculus plays an important role in the understanding of science, engineering and economics. This course is an introductory course includes basic concepts of differential and integral calculus as well as the techniques and applications of calculus. The course mainly discusses fundamental theorem of calculus substitution, trapezoidal, Simpson’s rules, derivatives and rates of change, definite and indefinite integrals and the Net Change Theorem, applications of integration including area between curves and volumes and so on. After this course, students should have developed skills allowing them to work effectively with the concepts.

Upon completion of this course, students will be able to:

1. Demonstrate an understanding of limits and continuous functions by evaluating and manipulating them;
2. Exhibit fluency in differentiation by identifying and applying standard techniques for evaluating derivatives;
3. Exhibit fluency in integration by identifying and applying standard techniques for evaluating integrals;
4. Apply calculus to a variety of mathematical applications that include curve sketching, optimization problems and the calculation of rates of change, areas, and volumes;
5. Demonstrate a basic understanding of infinite sequences and series by describing their convergence properties.

PREREQUISITES

None

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
2 Assignments	20 Points
2 Quizzes	20 Points
Midterm Exam	30 Points
Final Exam	30 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$.

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

James Stewart, ***Single Variable Calculus: Early Transcendentals***, 8th Edition, 2015, Brooks/Cole Pub Co.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Course Introduction Topic 2: Functions and Models Topic 3: The Limit of a Function Topic 4: Continuity **Assessments:** Assignment # 1
Module 2	**Topics:** Topic 5: Derivatives and Rates of Change Topic 6: Differentiation Rules

	Topic 7: Applications of Differentiation Topic 8: The Definite Integral **Assessments:** Quiz # 1
Module 3	**Topics:** Topic 9: Indefinite Integrals and the Net Change Theorem Topic 10: Applications of Integration(Areas Between Curves; Volumes) Topic 11: Techniques of Integration Topic 12: Further Applications of Integration **Assessments:** Midterm Exam
Module 4	**Topics:** Topic 13: Modeling with Differential Equations Topic 14: Separable Equations Topic 15: Polar Coordinates Topic 16: Calculus with Parametric Curves **Assessments:** Assignment # 2
Module 5	**Topics:** Topic 17: Areas and Lengths in Polar Coordinates Topic 18: Infinite Sequences and Series Topic 19: Vectors and the Geometry of Space and Vector Functions Topic 20: Final Exam Reviews **Assessments:** Quiz # 2 Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed

the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

1) Late assignments are not acceptable and are subjected to grade deductions.
2) Assignments submitted in the wrong format will be counted as not submitted.
3) Failure to submit or fulfill any required course component results in failure of the class.
4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (e.g., note taking, reading course documents).

ACEDEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for

access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.