MAT 134 Functions

Summer 2024

Course Credits: 4
Contact Hours: 56 hours
Instructor: TBA
Email:TBA

COURSE OBJECTIVES

This course provides a thorough exploration of polynomial, rational, logarithmic, exponential, and trigonometric functions. Topics covered include factoring, polynomial families, logarithmic laws, trigonometric ratios, and identities. Students will solve equations and inequalities involving these functions and analyze their graphs. Operations such as addition, multiplication, and composition of functions, as well as inverse functions, will be studied. The course also addresses average and instantaneous rates of change, approximation methods, and applications like finding extrema and modeling data.

Upon Completion of this Course, students will be able to:

1. Understand polynomial, rational, logarithmic, exponential, and trigonometric functions;
2. Apply mathematical concepts to solve equations and inequalities;
3. Analyze graphs of various functions;
4. Perform operations on functions and determine inverse functions;
5. Calculate rates of change and approximate instantaneous rates of change.

PREREQUISITES

N/A

GRADING

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

ITEM	POINTS
2 Assignments	20 Points
Midterm 1	15 Points
Midterm 2	15 Points
2 Projects	20 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:

Eric Connally, ***Functions Modeling Change: A Preparation for Calculus***, 5th Edition, Wiley, 2017.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Introduction to Functions Topic 2: Understanding Function Notation Topic 3: Linear Functions and Equations Topic 4: Quadratic Functions and Their Properties **Assessments:** Assignment 1

Module 2	**Topics:** Topic 5: Polynomial Functions and Their Behavior Topic 6: Exponential Functions and Their Applications Topic 7: Logarithmic Functions and Their Graphs Topic 8: Trigonometric Functions and Their Characteristics **Assessments:** Assignment 2 Project 1
Module 3	**Topics:** Topic 9: Transformations of Functions Topic 10: Combining Functions: Addition, Subtraction, Multiplication, Division Topic 11: Composite Functions and Their Representations Topic 12: Inverse Functions and Their Properties **Assessments:** Midterm#1 Project 2
Module 4	**Topics:** Topic 13: Modeling with Functions: Real-World Applications Topic 14: Solving Equations Involving Functions Topic 15: Finding Zeros and Intercepts of Functions Topic 16: Analyzing Rates of Change Using Functions **Assessments:** Midterm#2
Module 5	**Topics:** Topic 17: Applications of Derivatives in Calculus Topic 18: Optimization Problems and Applications Topic 19: Integration Techniques and Their Applications Topic 20: Advanced Topics in Functions: Limits, Continuity, and Differentiability **Assessments:** 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 (eg., 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.