



MATH 011: Calculus I

Term: Summer, 2019

Time: Monday – Friday, 5 Weeks

Class Sessions per Week: 5

Class Session Length (minutes): 150

Total Contact Hours: 60

Credit Hours: 4

Course Description

This course covers differentiation and integration of functions of one variable with applications to real-world situations. Students will study the foundations of calculus, the study of functions and their rates of change. They will learn to measure the instantaneous rate of change of a function as well as the total accumulation of a function over an interval. Additional topics include differentiation and integration of algebraic, trigonometric, inverse trigonometric, logarithmic, and exponential functions.

Prerequisite: A college level pre-calculus course.

Textbook(s)

Calculus: Early Transcendentals, 8th edition, ISBN: 978-1285741550

Course Assessment(s)

Attendance and In-class work

Students are expected to be in class every day for the full class period. Material will be covered very quickly; it will be difficult to catch up, should one fall behind. We will spend some time in class working on problems in groups. Some of this work may be presented or turned in.

Homework

There will be regular homework assignments. Students are encouraged to work together on the homework problems.

Quiz

There will be 2 quizzes and no make-ups for quizzes. Lowest quiz score will be dropped.

Exam

There will be a midterm exam and a comprehensive final exam.



Grading

Attendance and in-class work	10%
Homework	15%
Quiz	15%
Midterm Exam	30%
Final Exam	30%
Total	100%

A: 90-100 A-: 85-89 B+: 82-84 B: 78-81 B-: 75-77 C+: 72-74 C: 68-71 C-: 64-67 D: 60-63
F: <60

Schedule

Week 1:

Chapter 1: Functions and Models

Functions. New functions from old.

Trigonometric functions.

Exponential function, inverse functions, logarithms.

Chapter 2: Limits and derivatives

Derivative: motivation. Informal definition of limit.

Limit laws. Squeeze theorem.

Continuity, asymptotes.

Definition of derivative. Derivative as a function.

Week 2:

Chapter 3: Differentiation rules

Derivative of polynomials. Product and quotient rules.

Derivatives of trig functions.

Chain rule, implicit differentiation.

Derivative of the logarithm. Applications.

Related rates, linear approximation.

Midterm Exam

Week 3:

Chapter 4: Applications of Differentiation

Maximization. Mean value theorem.

Second derivative, convexity, second derivative test. L'Hospital's rule.

Graph sketching. Optimization problems.

Newton's method.

Antiderivatives.

Week 4:

Chapter 5: The integral



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Definite integral: definition.

The “area so far” function.

The fundamental theorem of calculus. Evaluating definite integrals via the “net change theorem”

Substitution rule.

Week 5:

Reading Day

Review Session

Final Exam

Policies

Exam and Attendance

No make-ups for missed exams. If legitimate absence, midterm exam can be excused.

Attending all class meetings is required. Students are responsible for missing class by any reason. We will be covering a lot of material quickly so it is detrimental to miss even a day.

Academic Honesty

Xihua University expects all students to do their own work. Instructors will fail assignments that show evidence of plagiarism or other forms of cheating, and will also report the student's name to the University administration. A student reported to the University for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

Special needs

Students with disabilities and special needs should consult with the professor early in the semester. Recording of lectures is permitted.