Nanchang University
MATH11: Calculus I
(Last Updated in Jan. 2025)

Credit: 4

Contact Hours

This course is composed of 24 lecture sessions, 3 tutorial sessions and 9 office contact hours. Each lecture session takes 2 contact hours in length; each tutorial session takes 3 contact hours in length; There will be a Q-A review session (3 contact hours) and Final Exam (3 contact hours) at the end of this term. This course has 72 contact hours in total.

Course Description

This course introduces differential and integral calculus for functions of a single variable, emphasizing techniques and applications as well as major theorems such as the fundamental theorem of calculus. Topics include limits, derivatives, extrema, integrals, and the fundamental theorem, each motivated and illuminated by applications.
Upon successful completion of this course, students will
1. be able to work confidently with functions represented verbally, numerically (by a table of values), graphically, or algebraically (by a formula) and be able to relate, as well as create, such representations;
2. understand, be able to describe, and be able to apply the fundamental tools that calculus provides for analyzing functions: derivatives, which represent rates of change, and definite integrals, which can be used to compute net change;
3. recognize when the tools of calculus can be applied to analyze a function and be able to communicate—with clarity and precision—the results of their analysis;
4. be able to assess the quality of competing solutions to problems based on criteria such as clarity, efficiency, and elegance;
5. have further developed their problem-solving skills and strategies through modeling and solving a wide variety of problems, including some with real-world applications.

Note: This Syllabus is subject to change based on the needs of the class.

Required Textbook

Textbook: *Single Variable Calculus: Early Transcendentals* by James Stewart, 8th edition.

Grading

- •Participation   10%
- •Homework   20%
- •3 Tests   20%
- •Midterm   20%
- •Final Exam   30%

A+	96-100	A	90-95	A-	85-89
B+	82-84	B	78-81	B-	75-77
C+	71-74	C	66-70	C-	62-65
D	60-61	F	< 60		

Course Schedule

The course has 24 class sessions in total. All sessions are 2 contact hours in length. At the end of this term, there will be a Q-A review session(3 contact hours) and Final Exam (3 contact hours).
Note: the course outline and required readings are subject to change.

Class 1:
Introduction to the course and section

Class 2:
Functions, lines, definition of derivative, limits

Class 3:
Limit laws; Continuity

Class 4:
Derivatives and Rates of Change

Class 5:
Differentiation Rules & Trig Derivatives

Class 6:
Problem Session (1st half of class); Test 1 (second half of class)

Class 7:
Chain Rule; Implicit Differentiation

Class 8:
Applications (including related-rates & exponential growth)

Class 9:
Maximum and Minimum Values & The Mean Value Theorem

Class 10:
Review for Midterm

Class 11:
Midterm Exam

Class 12:
Curve Sketching Using Calculus

Class 13:
Curve Sketching Using Calculus (Cont.)

Class 14:
Problem Session (1st half of class); Test 2 (second half of class)

Class 15:
Optimization Problems & Anti-derivatives

Class 16:
Definition of Definite Integral

Class 17:
The Fundamental Theorem of Calculus

Class 18:
Evaluation of Integrals & The Substitution Rule

Class 19:
Problem Session (1st half of class); Test 3 (second half of class)

Class 20:
Applications of integrals (areas and volumes)

Class 21:
Applications of integrals (arc-length and average value)

Class 22:
L' Hospital's Rule

Class 23:
L' Hospital's Rule(Cont)

Class 24:
Individual Report: Apply Calculus to Every Day Life.

Attending Policy

Regular and prompt attendance is required. Under ordinary circumstances, you may miss two times without penalty. Each absence over this number will lower your course grade by a third of a letter and missing more than five classes may lead to a failing grade in the course. Arriving late and/or leaving before the end of the class period are equivalent to absences.

Policy on "Late Withdrawals"

In accordance with university policy, appeals for late withdrawal will be approved ONLY in case of medical emergency and similar crises.

Academic Honesty

Nanchang 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.

General Expectations:

Students are expected to:
— Attend all classes and be responsible for all materials covered in class and otherwise assigned;
— Complete the day's required reading and assignments before class;
— Review the previous day's notes before class and make notes about questions you have about the previous class or the day's reading;
— Participate in class discussions and complete required written work on time;
— Refrain from texting, phoning or engaging in computer activities unrelated to class during the class period;
— While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

Special Needs or Assistance

Please contact the 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. Our goal is to help you learn, not to penalize you for issues which mask your learning.