BOROUGH OF MANHATTAN COMMUNITY COLLEGE
City University of New York

Department of Mathematics

Title of Course: Analytic Geometry & Calculus I
Course: MAT 301
Semester: Winter 2026
Credits: 4
Website:
https://openlab.bmcc.cuny.edu/calculus-mat-301-j101-winter-2026/

Class hours: 4
Lab hours: 2
Instructor: Ivan Retamoso
Tel#: 212 776 6432
Office: N599U
Email: iretamoso@bmcc.cuny.edu

MAT 301-J101 (29689) is an **"in-person" course** which will run on BRIGHTSPACE.

We will meet **in person** on Monday, Tuesday, Wednesday, Thursday, and Friday, from 10:00 AM to 1:40 PM in Fiterman 607. You are also required to attend in-person Python lab sessions Monday, Tuesday, Wednesday, Thursday, and Friday from 2:20 PM to 4:00 PM in Fiterman 507. These sessions will be conducted by our Python teaching assistant Hassami Sawadogo hsawadogo@bmcc.cuny.edu.

The Winter semester starts on Friday January 2.

You are expected to devote 20-30 hours per week for this **Calculus** course. Check your BMCC email and announcements on BRIGHTSPACE, at least twice a day, stay updated. Assignments will be given on BRIGHTSPACE, so make sure you are able to sign into BRIGHTSPACE from day one.

In order to complete this course, you must do the following:

- **Take EXAM 1, EXAM 2, and FINAL EXAM in-person.**
- **Submit all Homework Assignments on WeBWorK.**
- **Submit all Python Lab Assignments on BRIGHTSPACE.**
- **Go through all DESMOS activities on BRIGHTSPACE.**

My Office Hours: I will be available for Office Hours on Mondays from 8:30 am to 9:30 am at main building room N599U.

Course Description: An integrated course in analytic geometry and calculus applied to functions of a single variable. A study of functions; limits; continuity; related rates; differentiation of algebraic and transcendental functions; Rolle's Theorem; The Mean Value Theorem; Maxima and Minima; curve sketching; differentials; and introduction to integration.

MAT 301 has a computer laboratory component. Students utilize computer software such as graphing packages, a computer algebra system, and a mathematical word processor to complete laboratory assignments associated with their calculus course.

Prerequisites / Co-requisites: Precalculus (MAT 206) or the equivalent with departmental approval.

Student Learning Outcomes:

Course Student Learning Outcomes	Measurements
1. Students will be able to calculate the limit analytically and geometrically. They will use the limit to determine continuity.	1. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects.
2. Students will be able to use the concept of the limit to compute the derivative. Students will be able to calculate the derivative for algebraic and transcendental functions. Students will use implicit and explicit differentiation to solve applied problems.	2. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects
3. Students will be able to compute higher order derivatives and apply this to curve sketching and optimization problems.	3. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects.
4. Students will be able to use the Fundamental Theorem of Calculus to compute the definite integral.	4. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects.

General Education Outcomes and Assessment:

General Education Learning Outcomes	Measurements
Communication Skills - Students will be able to write, read, listen and speak critically and effectively.	Assignments and/or take home projects; exams and/or Midterm Exam; Final Exam and Lab Projects.
Quantitative Reasoning - Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Assignments and/or take home projects; exams and/or Midterm Exam; Final Exam and Lab Projects.
Information & Technology Literacy - Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Assignments and/or take home projects; exams and/or Midterm Exam; Final Exam and Lab Projects.

Free Tutoring:
For Help (Free Tutoring) with this course you can click the link below.
https://www.bmcc.cuny.edu/students/lrc/virtual-learning-center/

Calculator:
Scientific Calculator (Such as Texas Instrument model TI-30XIIS or similar) is needed for this course.

Required Text: zero cost OER Textbook can be downloaded as a PDF file and read online or offline, by clicking the link below.
https://openstax.org/details/books/calculus-volume-1

Also, you can get the Textbook by downloading the free **OpenStax + SE** app.
For IOS (Apple) go to:
https://apps.apple.com/us/app/openstax-with-studyedge/id1473661166?book=calculus-volume-1
For Android go to:
https://play.google.com/store/apps/details?id=com.openstax.openstax&hl=en

Homework: We will use **WeBWorK** for homework assignments. This is a Free-Open Source Platform!
You can log into **WeBWorK** by clicking the link below:
http://webwork.bmcc.cuny.edu/webwork2/2026_Winter_MAT301_J101_Retamoso/
To log into **WeBWork**, if your name is: Adam Smith
your user Id is: asmith
your password is: your CUNY Id number.

Use of Technology:
Students will be using PYTHON a computer system which will help them visualize various concepts developed in class.

Final Grade computation:

Exam 1:	20%
Exam 2:	20%
DESMOS Activities:	5%
Homework (WeBWorK):	20%
PYTHON Assignments:	15%
Final Exam:	20%

Your Final Grade will be based on:

https://www.bmcc.cuny.edu/academics/policies/grading-policies/grading-system/

Outline of Topics

Syllabus

Chapter 2
Limits
2.1 A Preview of Calculus
2.2 The Limit of a Function
2.3 The Limit Laws
2.4 Continuity

Chapter 3
Derivatives
3.1 Defining the Derivative
3.2 The Derivative as a Function
3.3 Differentiation Rules
3.4 Derivatives as Rates of Change
3.5 Derivatives of Trigonometric Functions
3.6 The Chain Rule
3.7 Derivatives of Inverse Functions
3.8 Implicit Differentiation
3.9 Derivatives of Exponential and Logarithmic Functions

Chapter 4
Applications of Derivatives
4.1 Related Rates
4.2 Linear Approximations and Differentials
4.3 Maxima and Minima
4.4 The Mean Value Theorem
4.5 Derivatives and the Shape of a Graph
4.6 Limits at Infinity and Asymptotes
4.7 Applied Optimization Problems
4.8 L'Hôpital's Rule
4.9 Newton's Method
4.10 Antiderivatives

Academic Adjustments/Students with Disabilities:
Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities (Room N320; 220-8180). BMCC is committed to providing equal access to all programs and curricula to all students.

BMCC Policy Statement on Plagiarism:
Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.
Students who are unsure of how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web site, www.bmcc.cuny.edu.