Department of Mathematics

Title of Course: Analytic Geometry & Calculus I
Course: MAT 301
Semester: Winter 2020
Credits: 4

Class hours: 4
Lab hours: 2
Instructor: Ivan Retamoso
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Website: https://openlab.bmcc.cuny.edu/calculus-1-mat-301-1200/

MAT 301-1200 (12321) meets:
Monday, Tuesday, Wednesday, Thursday, and Friday from 10:00am to 1:40pm at Fiterman 411.
Also, you must attend computer laboratory (Maple) sessions:
Monday, Tuesday, Wednesday, Thursday, and Friday from 2:10pm to 3:50pm at Fiterman 807.

My Office Hours: By appointment.

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 go to Main Building S-535 (Math Lab).
https://www.bmcc.cuny.edu/academics/departments/math/mathematics-lab-tutoring/

Calculator:
Scientific Calculator (Such as Texas Instrument model TI-30XIIS or similar) is needed for this course. You CAN NOT use Cellphones or Tablets "as a calculator" when you take Exams.

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 our class at this address:
http://webwork.bmcc.cuny.edu/webwork2/2020_Winter_MAT301_1200_Retamoso/

To sign into **WeBWork**,

If your name is: Adam Smith

your user Id is: asmith

and

your password is: your cuny Id number.

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

Final Grade computation:

Exam 1:   25%

Exam 2:   25%

Homework, computer laboratory (MAPLE), and Participation: 20%

Final Exam: 30%

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

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.