BOROUGH OF MANHATTAN COMMUNITY COLLEGE
The City University of New York
Department of Mathematics

Title of Course: Analytic Geometry & Calculus II   Class Hours: 4

MAT 302   **Laboratory Hours per Week: 2**

Semester:

Instructor Information (Phone#, Office#, email):

Credits: 4

Course Description:
This course is an introduction to the concepts of integration. It
covers the integration of algebraic and transcendental functions. Topics include the anti-derivative, the definite integral, areas, volumes, applications, the improper integral, sequences and series.
MAT 303 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.

Basic Skills:_____

Prerequisites: Calculus I (MAT 301) or the equivalent with departmental approval.

Corequisites: -

Course Student Learning Outcomes	Measurements
1. Students will be able to find the anti-derivative of both algebraic and transcendental functions.	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 Riemann sums to find the area under a curve.	2. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects
3. Students will be able to apply the First and Second Fundamental Theorems of Calculus.	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 definite integral to evaluate areas, volume, arc lengths and surface areas.	4. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects.
5. Students will be able to use traditional integration techniques such as substitution, integration by parts, trigonometric substitutions and partial fractions to find anti-derivatives.	5. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects.

11/20/2019

6. Students will be able to understand the concept of the improper integral.	6. Homework assignments and/or take home projects; Quizzes and/or Midterm Exams; Final Exam; Lab Projects.
7. Students will be able to apply a variety of tests for determining the convergence or divergence of infinite series as well as intervals of convergence for power series; to find Taylor series representations of basic functions.	7. 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 (means of assessment for general education goals listed in first column)**
X	**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.
X	**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.
X	**Scientific Reasoning-** Students will be able to apply the concepts and methods of the natural sciences.	Assignments and/or take home projects; exams and/or Midterm Exam; Final Exam and Lab Projects.
☐	**Social and Behavioral Sciences-** Students will be able to apply the concepts and methods of the social sciences.	
☐	**Arts & Humanities-** Students will be able to develop knowledge and understanding of the arts and literature through critiques of works of art, music, theatre or literature.	
X	**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.
☐	**Values-** Students will be able to make informed choices based on an understanding of personal values, human diversity, multicultural awareness and social responsibility.	

Required Text:
Calculus: Early Transcendental Functions, 6th Edition, Ron Larson & Bruce Edwards; Brooks/Cole, Cengage Learning, 2014

Other Resources: -

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

Evaluation and Requirements of Students:
At the beginning of the semester, the instructor will advise students of the determination of the final grade which will be based on class work, tests, and the final examination. Students are required to attend all scheduled classes

Outline of Topics

* It is **required** to choose **one** of sections 7.6, 7.7 to cover. Additional coverage is optional

Suggested Calendar

HRS	SECTIONS	TOPIC
1	5.1	Antiderivatives and Indefinite Integration
2	5.2	Area
2	5.3	Riemann Sums and Definite Integrals
2	5.4	The Fundamental Theorem of Calculus
2	5.5	Integration by Substitution
1	7.1	Area of a Region Between Two Curves
2	7.2	Volume: The Disk Method
2	7.3	Volume: The Shell Method
3	7.4	Arc Length and Surfaces of Revolution
2	7.5	Work
2…	7.6*	Moments, Centers of Mass, and Centroids
Or 2	7.7*	Fluid Pressure and Fluid Force
1	8.1	Basic Integration Rules
2	8.2	Integration by Parts
2	8.3	Trigonometric Integrals
2	8.4	Trigonometric Substitution
2	8.5	Partial Fractions
2	8.8	Improper Integrals
1	9.1	Sequences
1	9.2	Series and Convergence
2	9.3	The Integral Test and p-Series
2	9.4	Comparisons of Series
1	9.5	Alternating Series
2	9.6	The Ratio and Root Tests
2	9.8	Power Series
2	9.9	Representations of Functions by Power Series
1	9.7	Taylor Polynomials and Approximations
2	9.10	Taylor and Maclaurin Series
	10.2	Curves Defined by Parametric Equations [optional]
	10.3	Calculus with Parametric Curves [optional]
	10.4	Polar Coordinates [optional]
	10.5	Areas and Lengths in Polar Coordinates [optional]

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.

Single Stop www.bmcc.cuny.edu/singlestop, room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220-8130.

Counseling Center www.bmcc.cuny.edu/counseling, room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

Office of Compliance and Diversity www.bmcc cuny.edu/aac, room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email olevy@bmcc.cuny.edu, or twade@bmcc.cuny.edu. If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

Office of Accessibility www.bmcc.cuny.edu/accessibility, room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

College Attendance Policy
At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

BMCC Policy on Plagiarism and Academic Integrity Statement
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 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. For further information on integrity and behavior, please consult the college bulletin (also available online).