Math 201-001: Pre-Calculus Spring 1 2023
Guttman Community College
50 W 40th Street, New York, NY

Course Details
Course number/Section: Math 201-001– #7030

Instructor: Luis Zambrano   **Office:** 818F

Email: luis.zambrano@guttman.cuny.edu   **Office Hours:** Mondays 3:30 -4:30 pm

Phone: 646-313-8282   Thursdays 1:15 –2:15 pm

Meeting: M, W, TH Rm 501
              11:30 AM- 1:00 PM.
         + 1 Asynchronous Weekly Class/Lab

Course Website: Blackboard/ MyOpenMath

Catalogue Description and Overview
This course is a comprehensive treatment of the conceptual and computational underpinnings of the calculus. Precalculus extends and deepens the functions-based approach introduced in College Algebra & Trigonometry. Verbal, numerical, and graphical representations are employed throughout to analyze functions. Topics include polynomial and rational functions; absolute value; matrices; conic sections; transformations; factoring polynomials; trigonometric, exponential, and logarithmic functions; inverse functions; rates of change; and modeling realistic situations with functions. Graphing calculators and software such as Microsoft Excel, GeoGebra, and Maple will be incorporated into all aspects of the course. Students will design and carry out a semester-long project involving advanced algebraic analysis of an issue attendant to New York City's development over time.

Co-requisites or Pre-requisites: Demonstration of Elementary Algebra Proficiency, MATH 103 or both MATH 103A and MATH 103B; MATH 120, or permission from Instructor

Credits/Hours: 5 Hours/3 Credits

Course Learning Outcomes
Upon successful completion of the course, students will be able to:
- Students will correctly and efficiently carry out complicated algebraic calculations, both with and without electronic devices.
- Students will correctly and efficiently solve (both with and without electronic devices) equations and inequalities involving polynomial, rational, radical, and transcendental functions.
- Students will correctly solve systems of linear equations using matrices.

- Students will accurately graph an assortment of functions and obtain information about a function's behavior from its graph.
- Students will successfully decide whether a function has an inverse (both analytically and graphically) and correctly determine inverse functions (both analytically and graphically).
- Students will translate realistic situations into representative functions and use their representations to solve problems.
- Students will articulate an understanding of the distinguishing properties of different families of functions and use their understandings to solve problems.
- Students will employ geometric and algebraic properties of conic sections to obtain correction solutions of both abstract and applied problems.
- Students will accurately identify arithmetic and geometric sequences and series; they will correctly calculate sums of finite arithmetic series and both finite and infinite geometric series.
- Students will successfully apply trigonometry to problems involving triangles and other polygons.

Guttman Learning Outcomes

Upon successful completion of this course, you will be able to do the following:

Broad, Integrative Knowledge:
  b. Exhibits an understanding of how different disciplines create knowledge and approach problem-solving

Intellectual Skills for Life-Long Learning
  c. Presents accurate mathematical calculations and operations, and explains how they are used to solve problems and to interpret data.
  d. Utilizes both quantitative and qualitative data to explore and understand important issues.
  e. Locates, evaluates and cites multiple information resources in projects, papers and presentations.
  f. Demonstrates ability to use appropriate technologies, acquire new ones and to resolve technology problems to meet academic, professional and personal goals
  g. Displays ability to assess own work and its relative value

Required Text

This is an Open Educational Resource course. All readings are Open Access and available on course page. No purchase of textbook required for this course.

Textbook Information:
Precalculus: An investigation of functions, (2nd eddition), David Lippman and Melonie Rasmussen
This book is a free, open educational resource. You can download the [textbook](http://www.opentextbookstore.com/precalc/2.2/Precalc.pdf) for free at
http://www.opentextbookstore.com/precalc/2.2/Precalc.pdf
This link will allow you download for free the full book. The editable Word version, a full book PDF, and chapter-by-chapter PDF files can also be found on the [book's website](#).

Required Materials

Notebook, organizer that works for you; Computer, access to the Internet for Blackboard and a free graphic calculator. We will avail ourselves of other, free online platform resources such as MS Excel, Desmos or GeoGebra.

Course Assignments and Assessment

Assignments:

Homework: MyOpenMath HW (linked to your Blackboard site): These assignments are available on-line, and are organized by due dates.

Short Quizzes: There will be short weekly quizzes, usually every Monday and/or Wednesday at the start of class.

Tests or Midterms: Three midterms and a final exam.

The tests will be given during class and will be completed individually. No make-up tests will be given unless prior arrangements are made and the reason for the absence was unavoidable. The form of any make-ups, if any, are at the sole discretion of the instructor.

Project: A signature assignment will allow students to research and develop understanding of a mathematical topic or application of interest to them, or the creation of a educational resource based on a topic in Pre-Calculus (i.e. a class activity, section of a textbook, worksheet, quiz, study guide, etc.)

Specifically, students must
- Demonstrate accurate use of mathematical vocabulary and notation.
- Demonstrate a connection between their topic and a real-world situation or their topic and another mathematical topic.
- Demonstrate their ability to explain this topic to others (by creating a presentation, handout, video, digital activity, etc.)
- Create original examples or tasks and provide accurate and detailed worked solutions.

Grading

Assessment
Your final grade will be based on attendance, participation in class, MyOpenMath HW and other written homework, quizzes, three midterm exams, and a semester-long project(s), which are worth the following percentages of your grade.

- *On line Homework Assignments 15%*
- *Worksheet activities/ Projects   15%*
- *Weekly quizzes   10%*
- *Midterm Exams   40%*
- *Final Exam   20%*

Overall grades will be based on the following scale (You can modify this to fit your expectations):

A	*93% and up*	*A-*	*Between 90% and 93%*	*B+*	*Between 87% and 90%*
B	*Between 83% and 87%*	*B-*	*Between 80% and 83%*	*C+*	*Between 77% and 80%*
C	*Between 74% and 77%*	*C-*	*Between 73% and 70%*	*D*	*Between 60% and 70%*
F	*Below 60%*				

The Water Quality and Sustainability Project, for those students participating in the Global Guttman GSACS international exchange unit, will count towards 20% of the course grade as follows:

- *On line Homework Assignments 15%*
- *GSACS Global exchange Projects 20%*
- *Weekly quizzes   10%*
- *Midterm Exams   35%*
- *Final Exam   20%*

Incompletes: Incompletes are rarely given and will only be considered under the following circumstances: The student has completed the majority of the work for the course, the student is passing the course based on the work completed at the time the incomplete is requested, and there are extenuating circumstances that prohibit the completion of a small portion of the course.

As learning from mistakes is one of the most productive ways to reflect and to learn, it is important to always carefully review all assessments handed back to you. Completing timely test (and quiz) corrections, regardless if assigned for credit by the instructor or not,

Please note: In general, there are no Make-up tests. If there are extenuating circumstances, justified by valid and approved documentation, then possible make-up work is resolved at the instructor's discretion. NO EXCEPTIONS.

Technical Support

If you need access to a laptop, need support or have any technology, IT-related questions including about Blackboard, please contact the helpdesk and submit an online request at helpdesk@guttman.cuny.edu.

The Help Desk is open Monday – Friday from 8:00 AM – 6:00 PM. If you need Blackboard help outside of these hours, you can contact Blackboard support at: 646-664-2024 or go to helpdesk@guttman.cuny.edu

The general CUNY tech site for Blackboard support: https://www.cuny.edu/about/administration/offices/cis/core-functions/cuny-blackboard/helpsupport/

General Support

Learning in this format at this time is a challenge for all of us. Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, or needs mental health support and believes this may affect their performance in this course is urged to visit the Guttman Essential Information for Personal Well Being website for support and to email the Dean of Students at Dean.OSE@guttman.cuny.edu. Please use these resources for support and let your instructor know if we can support in any other ways.

https://guttman.cuny.edu/news/coronavirus-updates/essential-information-for-personal-wellbeing/

College-wide Policies

Policy on Academic Honesty

Guttman Community College considers intellectual honesty to be the cornerstone of all academic and scholarly work. GCC views any form of academic dishonesty as a serious matter and requires all instructors to report every case of academic dishonesty to its Academic Integrity Officer, who keeps records of all cases. All work submitted or posted by students in this course must be their own. Submission of writing or ideas which are not the original work of the student, or which is not adequately referenced, is considered plagiarism. Unintentional plagiarism is still plagiarism, so if you have any question about whether or not to acknowledge a source, acknowledge it. And if you are still uncertain, be sure to ask.   Refer to Article II of your Student Grievance Procedures for further details on academic honesty and Guttman's academic integrity procedures, at [Academic Policies url link] Penalties for academic dishonesty include academic sanctions, such as failing or otherwise reduced grades, and/or disciplinary sanctions, including suspension or expulsion.

Disability Support Services

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Guttman Community College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/ or Learning) consult the Office of AccessABILITY located in Room 506 to secure necessary academic accommodations. For further information and assistance please call 646-313-8061 or speak to your Student Success Advocate or Career Strategist.

Critical Incident Management

Guttman expects students to respect the rights, privileges and property of other people. Faculty are required to report disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment or inhibits students' ability to learn.

Viewpoint Tolerance
Some of the issues covered during the seminar may evoke strong emotions. Students, faculty and staff must be able to disagree respectfully with others on topics that are personally very important to them. **Civility is essential to all scholarly discourse**.

Professionalism will be expected at all times, but most especially with your interactions online. Because the university classroom is a place designed for the free exchange of ideas, we must show respect for one another in all circumstances. We will show respect for one another by exhibiting patience and courtesy in our exchanges. Appropriate language and restraint from verbal attacks upon those whose perspectives differ from your own is a minimum requirement. Courtesy and kindness is the norm for those who participate in my class.

Our discussion board is a way for you to share your ideas and learning with your colleagues in this class. We do this as colleagues in learning, and the Discussion Board is meant to be a safe and respectful environment for us to conduct these discussions.

Some Netiquette Rules:
· Treat one another with respect. It will be expected that we will not attack one another personally for holding different opinions.
· Do not use all CAPITAL LETTERS in emails or discussion board postings. This is considered "shouting" and is seen as impolite or aggressive.
· Begin emails with a proper salutation (Examples: Dr. Name; Ms. Name; Hello Professor Name; Good afternoon Mr. Name). Starting an email without a salutation or a simple "Hey" is not appropriate.
· When sending an email, please include a detailed subject line. Additionally, make sure you reference the course number (Ex. ENGL 287) in the message and sign the mail with your name.
· Use proper grammar, spelling, punctuation, and capitalization. Text messaging language is not acceptable.
· Re-Read, think, and edit your message before you click "Send/Submit/Post."

Please remember when posting to be respectful and courteous to your colleagues, and limit your posts to discussions of this course and its assignments.

Expectations for Out-of-Class Time
For every one instructional credit hour in class, a Guttman student is expected to spend at least two hours out-of-class studying, reading, writing, researching and working on projects, and preparing for tests. E.g. for a 3 credit course that meets for 3 hours each week, a student is expected to spend at least 3- 6 hours outside of class time doing related course work. If a course provides more time in class than one hour for one credit, the additional time may offset out- of-class time expectations.

Starfish

Starfish is a communication tool for students, faculty, advisors, and many academic support and student service areas at Guttman. Instructors and advisors will use Starfish to provide you with feedback about your progress. Throughout the semester, you may receive emails or text messages regarding your academic performance and referrals to specific campus resources, such as peer mentors or tutors. You can use Starfish to "Raise Your Hand" and ask questions, and make appointments with your advisor or with other service areas. To access Starfish log into my.guttman.cuny.edu and click the Starfish icon on the left side of the page. If you need help using Starfish, you can speak to your advisor.

Attendance Policy

Success in this course is dependent on your active participation throughout the course. You are expected to log into Blackboard several times a week and complete course assignments. Even if your work is completed, you still need to login to ensure that you have seen all announcements, etc. It is your responsibility to check updates related to the course.

Late Work/Make-up Policy

All assignments, quizzes, and tests are due by the deadline as posted on the course schedule.

Please plan accordingly, and complete these assignments in advance of their deadlines to ensure any unanticipated circumstances do not result in a missed assignment. User error does not qualify you for any kind of makeup or retake opportunity.

Completing and submitting the assignments or exam responses by the due date is the sole responsibility of you. Avoid incomplete scores because of failure to submit the assignment or test by the due dates.

You will be allowed to access the assignments an unlimited number of times until the due date/time, and take tests one time each on or before the due date/time as indicated on the course calendar. If you are concerned about missing a deadline, you may want to do any of the following:
- · Submit your assignment the day before the deadline; or
- · Begin tests as soon as they are made available online.

Late tests will be accepted if the following two requirements are met:
1. You must contact me in advance of the exam's deadline to make arrangements for its completion.
2. You must complete the exam within the week following its due date.

Note that the clock on your computer may be different than the clock in Blackboard. Plan accordingly. I recommend that you submit your assignments, quizzes, and exams well before the deadline.

Tentative Calendar

Dates	Topics/Events	Activities/Worksheets
March 7	Review & Basic Concepts	Functions and Relations
	Functions; Properties	1. Domain and Range introduction 2. Finding Domain and Range
	GSACS Project INTRO Readings/Video	Graphing principles
	Polynomial Functions	1. Polynomial Pandemonium 2. Polynomial Equation Challenge 3. Constructing Polynomials
March 13	Rational Functions	1. Rational Functions: 2. A more general look at Rational Functions
	Exponential functions	Exponential Functions Piecewise Functions
	Exponential graphs; Exponential AppsIntro to Logarithms	
March 20	GSACS Global VIDEO ZOOM CALL	
	Basic Logarithms; Log Graphs	Logarithms Properties
	Natural Exponential Function	
March 27	**Exam 1**	1. Exponential Function Apps; Geogebra 2. Exponential Vs Linear Vs Quadratic
	Exponential Functions (continued)	Applications Project
April 3	Trigonometry with circles & triangles	Midterm Check
April 17	**Logarithm functions: graphs;**	Logarithms Properties Worksheet
	Inverse Functions	
April 24	**Exam 2**	
	Trigonometry applications; circle triangle Radian measure.	Graphing in unit circle worksheet
	Graphs of Trigonometric Functions Sinosoidal funcctions	
May 1	Applications Trigonometric functions; Solving Trigonometry Equations	
	Transformations of Functions Advanced graphing of Transcendental Functions	Geogebra simulations and Project
May 8	Graphs of Reciprocal Trig functions	
	Trigonometry Identities	

May15	Pythagorean Identities; Solving Trig equations.	
	GSACS Project Due!	
May 22	**Trig double angle/half angle identities**	Trigonmetric Idenitities (cont.)
	Exam 3—Trigonometry functions	
	Infinite series and sequences	Practice Final Exam
May 29	**Conic Sections**	Geogebra simulations and Project
	Introduction to the derivative	
	Final Review	Practice Final Exam
June 12	**Last Day of Classes**	
June 13-15	**Final Exams!**	