BLUE RIDGE COMMUNITY COLLEGE

Department of Mathematics



Course Number/Section:	MTH 161-44-44A/MDE 61-44A
Name of Course:	PreCalculus I
Semester:	Spring Semester, 2024
Meeting Times for MTH 161-44-44A:	Mondays and Wednesdays: 11:00 am - 12:22 pm
Meeting Venue for MTH 161-44-44A:	E-106 Classroom
Meeting Times for MDE 61-44A:	Mondays and Wednesdays: 12:30 pm - 01:52 pm
Meeting Venue for MDE 61-44A:	D-115 Computer Lab

Course website:

https://precalculus.appspot.com/PreCalculusOnsite/PreCalculus.html

Instructor's Name: **Samuel Chukwuemeka** **B.Eng., A.A.T, M.Ed, M.S**

BRCC/VCCS E-Mail: chukwuemekas@brcc.edu

Office Location: F-105A

Student Engagement Hours: Mondays: 3:00 pm - 5:00 pm

Tuesdays and Thursdays: 1:00 pm - 5:00 pm

BRCC Phone Number: (540) 453-2367 (On Campus: Call)

Alternate(Google Voice) Phone Number: (256) 365-7048 (Off Campus: Text anytime)

Personal Quote: "The Joy of a Teacher is the Success of his Students." - Samuel Chukwuemeka

I. COURSE DESCRIPTION:

Presents topics in power, polynomial, rational, exponential, and logarithmic functions, and systems of equations and inequalities. Credit will not be awarded for both MTH 161: Precalculus I and MTH 167: Precalculus with Trigonometry or equivalent. This is a Passport and UCGS transfer course. Lecture 3 hours. Total 3 hours per week. 3 credits.

General Course Purpose

The general purpose of this one-semester course is to prepare students for a course in statistics or applied calculus sequence by providing them with the necessary competencies in algebra and functions. Precalculus I can also be applied in conjunction with Precalculus II in preparation for a course in calculus with analytic geometry.

Course Prerequisites/Corequisites

Prerequisites: Competency in MTE 1-9 as demonstrated through placement or unit completion or equivalent or Corequisite: MCR 6: Learning Support for Precalculus I

II. COURSE OBJECTIVES:

Upon completion of this course, the student should be able to do these measurable objectives for each topic.

❖ **Relations and Functions**

- Distinguish between relations and functions.
- Evaluate functions both numerically and algebraically.
- Determine the domain and range of functions in general, including root and rational functions.
- Perform arithmetic operations on functions, including the composition of functions and the difference quotient.
- Identify and graph linear, absolute value, quadratic, cubic, and square root functions and their transformations.
- Determine and verify inverses of one-to-one functions.

❖ **Polynomials and Rational Functions**

- Determine the general and standard forms of quadratic functions.
- Use formula and completing the square methods to determine the standard form of a quadratic function.
- Identify intercepts, vertex, and orientation of the parabola and use these to graph quadratic functions.
- Identify zeros (real-valued roots) and complex roots, and determine end behavior of higher order polynomials and graph the polynomial, and graph.
- Determine if a function demonstrates even or odd symmetry.
- Use the Fundamental Theorem of Algebra, Rational Root test, and Linear Factorization Theorem to factor polynomials and determine the zeros over the complex numbers.
- Identify intercepts, end behavior, and asymptotes of rational functions, and graphs.
- Solve polynomial and rational inequalities.
- Interpret the algebraic and graphical meaning of equality of functions ($f(x) = g(x)$) and inequality of functions ($f(x) > g(x)$)

❖ **Exponential and Logarithmic Functions**

- Identify and graph exponential and logarithmic functions and their transformations.
- Use properties of logarithms to simplify and expand logarithmic expressions.
- Convert between exponential and logarithmic forms and demonstrate an understanding of the relationship between the two forms.
- Solve exponential and logarithmic equations using one-to-one and inverse properties.
- Solve application problems involving exponential and logarithmic functions.

III. EVALUATION AND REQUIREMENTS:

A. **Grade Determination**: Student evaluation will be based on performance on the following assessments:

MyLab Math Assignments	= 70%
3 Tests @ 5% each	= 15%
Project	= 10%
Final exam	= 5%
……..	
TOTAL	= 100%

Method of Grading: The Weighted Average method is used to compute your grades. Grades will be posted in the Canvas course management system.

Grades: Letter grades are assigned using this scale:

[90, 100]	[80, 90)	[70, 80)	[60, 70)	[0, 60)
A	B	C	D	F

Here is an example to calculate the final grade**:**

Assessments	Weight (%)	Your Score (%)	Weighted Score
MyLab Math Assignments	70	90	6300
Test 1	5	95	475
Test 2	5	85	425
Test 3	5	80	400

Project	10	100	1000
Final Exam	5	70	350
$\Sigma Weight = 100$		$\Sigma Weighted\ Score = 8950$	
Final Grade = $\frac{Sum\ of\ Weighted\ Scores}{Sum\ of\ Weights} = \frac{8950}{100} = 89.5\% \simeq 90\% = A$			

Please NOTE:

(1.) The final grade is rounded to the nearest integer only one time.

A grade of 79.5000001% is rounded to an 80% which is a B, while a grade of 79.499999 is rounded to a 79% which is a C.

(2.) At least a final grade of 70% (C) is required to pass the course.

(3.) There is no extra credit or bonus point or curving grades for the course.

B. **LATE WORK/MAKE UP POLICY:**

Please review the Tentative Class Schedule for specific dates.

MyLab Math Assignments: All MLM assignments were released to you on the first day of class. There are two due dates for each section of the assignment as noted in the Tentative Class Schedule. After the initial due date, you may continue to work on any section you did not complete, up until the final due date without any penalty. After the final due date, no MLM assignment may be done.

Tests: Make-up tests are given for any missed test up until the date noted in the Tentative Class Schedule at the Testing Center. You are required to meet me during Student Engagement Hours before that date/day to discuss your make-up test. After that date, there will not be any make-up for any missed test. Please note that the tests taken in the class will have a Choose-and-Answer format for the sections/chapters. The make-up test will not have that option. Hence, it is highly recommended to take the tests at the scheduled dates.

Project: You are encouraged to submit a draft for the project. Then review and do the corrections based on my feedback and keep working with me until I give you the "*green*

light" for the main submission. Draft submissions/reviews/corrections should be done by the final due date for draft submissions. Even if you do not submit your draft for review, please make sure you submit your project in the Canvas course by the final due date for project submissions. After the final due date, no project is accepted.

Final Exam: If you know that you may miss the final exam, please come and see me during Student Engagement Hours so we can arrange for you to take it earlier. If you miss the final exam, you are required to meet with me ahead of time in the Office to discuss your make-up exam before you take it at the Testing Center.

IV. COURSE ATTENDANCE AND PARTICIPATION POLICY:

Attendance will be taken for every class session. It is important you attend class. But please note that attending class will not give you any point. Not attending class will not deduct any point from you. Remember that I do not believe in extra credit or bonus points. I believe in giving all my students a lot of opportunities to succeed.

Be it as it may, it is very important that you attend class regularly. If you are absent for any class session for any reason, please note that you are completely responsible for everything that was covered in your absence. You are required to review the MLM eBook resources and the instructor's resources. You are always welcome to meet me during Student Engagement Hours and ask questions regarding what you have reviewed.

V. COURSE ETIQUETTE:

It is my responsibility to promote a safe and conducive learning environment. It is my assumption that you know what is right and what is wrong. In that regard, I ask that you behave accordingly and be respectful at all times. The use of cell phones and other applicable electronic equipment besides computers should be done outside the classroom. Please note that cell phones and other applicable equipment will not be allowed during tests/exams.

Students are expected to uphold the core values of academic integrity which include honesty, trust, fairness, respect and responsibility. These core values, combined with finding one's purpose and passion and applying them in and out of classroom learning, produce students who become extraordinary citizens.

VI. **INSTRUCTOR SPECIFIC HONESTY/PLAGIARISM POLICY:**

As a BRCC student, it is your responsibility to be informed about what constitutes academic misconduct, how to avoid it and what happens if you decide to engage in it.

Examples of academic misconduct include (but are not limited to):

- plagiarism (turning in work of another person and not giving them credit)
- stealing an exam or course materials
- copying another student's homework, paper, exam
- cheating on an exam (copying from another student, etc.)
- falsifying academic documents

Please note that violations of academic misconduct may result in a failing grade in the assessment, a failing grade in the course, and/or a report to the college administration among others.

VII. **ARTIFICIAL INTELLIGENCE (AI) STATEMENT:**

A. **BRCC AI Procedure**: All work submitted in BRCC courses must be your own. Contributions from anyone or anything else, including AI sources, must be properly quoted and cited every time they are used. Failure to do so constitutes an academic integrity violation and the Statement on the Honor Code and Behavior Violations, and Disciplinary and Appeal Procedures will be implemented. Students are discouraged from using AI tools UNLESS under direct instruction from your instructor to do so. Contact your instructor if you are unsure or have questions BEFORE using AI for any assignment.

B. **Course level procedure**: If the need arises, we shall discuss in class the ways in which students are permitted to use AI for our assignments in an acceptable manner."

VIII. **INSTRUCTIONAL MATERIALS/TEXT:**

A. REQUIRED

(1.) MyLab Math (MLM) Access for the online assignments (has the eBook). The eBook has notes, videos, audiovisual resources and several learning aids. This is required. Please log into the Canvas course, click the **Access Pearson** link on the Left Hand Side (LHS) and follow the links/directions to access the assignments. Also, please review the eText and the Multimedia (Video and Resource) library.

(2.) Course website is required.

(3.) Pens, Graphing Calculator (TI-83 Plus or TI-84 Plus or TI-84 Plus CE or TI-Nspire CX II only). The use of any other calculator requires my approval. These are required.

(4.) Access to a Personal Computer or Mackintosh or any electronic device with internet and email capabilities, and updated internet browsers are required. You may use the computers in the School Computer Labs., School Library, or the Public Library.

B. RECOMMENDED

(1.) Graph Book, Ruler, Pencils.

(2.) The audiovisual resources and learning aids in the MLM Access.

(3.) Other resources that may be provided by the instructor.

C. NOT REQUIRED: PRECALCULUS (11th Edition; ©2020); Michael Sullivan; PEARSON ISBN-13: 978-0135189405 (The hard copy of the textbook is not required).

IX. COURSE SCHEDULE AND SEQUENCE OF INSTRUCTION:

Method of Teaching: Synchronous (Lecture). I do, You do, We do, Y'all do.

Tutoring: Please attend tutoring at either or all of these sites:

(1.) During Student Engagement Hours at my office

(2.) The Center for Academic Vision and Excellence (The CAVE)

Tentative Class Schedule: Spring Semester, 2024

Class Session	Day/Date	Sections(Textbook)/ Topics (Instructor)	Assessments Due
1	Wednesday / January 17	Course Syllabus Section 2.1	(Initial Due) Section 2.1-1st Section 2.1-2nd Section 2.1-3rd Section 2.1-4th
2	Monday / January 22	Section 2.2	(Initial Due) Section 2.2

3	Wednesday / January 24	Section 2.3	(Initial Due) Section 2.3-1st Section 2.3-2nd Section 2.3-3rd
4	Monday / January 29	Section 2.4	(Initial Due) Section 2.4-1st
5	Wednesday / January 31	Section 2.4 Project (Draft)	(Initial Due) Section 2.4-2nd Project Draft
Thursday: February 01: Last Day to Drop with Refund			
6	Monday / February 05	Sections 2.5	(Initial Due) Section 2.5-1st Section 2.5-2nd Section 2.5-3rd
7	Wednesday / February 07	Section 2.6 Section 3.1 Project	(Initial Due) Section 2.6 Section 3.1-1st Section 3.1-2nd Project
8	Monday / February 12	Section 3.2 Section 3.3	(Initial Due) Section 3.2 Section 3.3-1st Section 3.3-2nd Section 3.3-3rd
9	Wednesday / February 14	Section 3.4 Section 3.5	(Initial Due) Section 3.4 Section 3.5
10	Monday / February 19	**Test 1**: Chapters 2 and 3	**Test 1**: Chapters 2 and 3
11	Wednesday / February 21	Section 4.1	(Initial Due) Section 4.1-1st Section 4.1-2nd Section 4.1-3rd
12	Monday / February 26	Section 4.2	(Initial Due) Section 4.2-1st Section 4.2-2nd
13	Wednesday / February 28	Section 4.3	(Initial Due) Section 4.3-1st Section 4.3-2nd

			Section 4.3-3rd
14	Monday / March 04	Section 4.4	(Initial Due) Section 4.4-1st Section 4.4-2nd
15	Wednesday / March 06	Section 4.5	(Initial Due) Section 4.5-1st Section 4.5-2nd
16	Monday / March 11	Section 4.6 Spring Break: No Classes: Yes Assignments	(Initial Due) Section 4.6-1st Section 4.6-2nd Section 4.6-3rd
17	Wednesday / March 13	Section 4.7 Spring Break: No Classes: Yes Assignments	(Initial Due) Section 4.7
18	Monday / March 18	**Test 2**: Chapter 4	**Test 2**: Chapter 4
19	Wednesday / March 20	Section 5.1	(Initial Due) Section 5.1-1st Section 5.1-2nd
20	Monday / March 25	Section 5.2	Last Day to Withdraw with "W" (Initial Due) Section 5.2-1st
21	Wednesday / March 27	Section 5.2	(Initial Due) Section 5.2-2nd Section 5.2-3rd
22	Monday / April 01	Section 5.3	(Initial Due) Section 5.3-1st Section 5.3-2nd
23	Wednesday / April 03	Section 5.3	(Initial Due) Section 5.3-3rd Section 5.3-4th
24	Monday / April 08	Section 5.4	(Initial Due) Section 5.4-1st Section 5.4-2nd
25	Wednesday / April 10	Section 5.4	(Initial Due) Section 5.4-3rd Section 5.4-4th

26	Monday / April 15	Section 5.5	(Initial Due) Section 5.5-1st Section 5.5-2nd Section 5.5-3rd
27	Wednesday / April 17	Section 5.6 Project (Draft)	(Initial Due) Section 5.6-1st Section 5.6-2nd Section 5.6-3rd (Final Due) Project Draft
28	Monday / April 22	**Test 3**: Chapter 5	**Test 3**: Chapter 5
29	Wednesday / April 24	Section 11.2	(Initial Due) Section 11.2-1st Section 11.2-2nd (Final Due) Test 1 Make-up Test 2 Make-up Test 3 Make-up Project
30	Monday / April 29	**Comprehensive Final Exam**	**Comprehensive Final Exam**
31	Wednesday / May 01 Monday / May 06	Make-up for the Comprehensive Final Exam	Make-up for the Comprehensive Final Exam (Final Due) All MyLab Math Assignments

BRCC Student Resources: https://learn.vccs.edu/courses/161353

Email Policy: Please use your school email address (…@brcc.edu) for all communications relating to this course.

Legal Name: Please **use only your registered names (First Name and Last Name in the Canvas course)** for **all work done in this course**.

Rights to change: I reserve the right to change the information contained in this syllabus with notice. The institution reserves the right to do so, with or without notice.

Tips to Succeed in the Course.

Please:

- Do not procrastinate. Procrastination is inimical to time. Begin your MyLab Math assignments immediately. Complete at least 20 questions daily. Do not wait until the section is covered in the class before you complete it. MyLab Math has learning aids that you can use right away. Ask questions on any concept you do not understand.

- Flipped Classroom Learning: Review each topic to be taught in the Instructor's Resources, and in your textbook (eBook), the videos and other multimedia resources in your MyLab Math software prior to coming to class. Please ask questions.

- Attend class sessions regularly. Participate in the review sessions.

- This course will require a lot of your time. You will do a lot of work. Please be determined to work very hard. The good thing is that I am here to help you. Please ask questions. I am here to help you.

- Other information will be provided and/or discussed as applicable. (Tutoring, Peer Learning, Everyday Math Learning, etc.)

X. Required Supplement to Syllabus

In addition to what is outlined on this syllabus, more required policies and procedures are found here: www.brcc.edu/syllabus.