

Effective: Fall 2024

COURSE INFORMATION

Course Title: Pre-calculus

Course Number: MATH 100

Credits: 3

Total Weeks: 14 (Fall, Spring)
12 (Summer)

Total Hours: 39

Course Level: First Year Second Year
 New Revised Course
 Replacement Course

Department: Math / Statistics

Department Head: G. Belchev

Former Course Code(s) and Number(s) (if applicable): N/A

Pre-requisites (If there are no prerequisites, type NONE): PREC 11 minimum "B" or PREC 12

Co-requisite Statement (List if applicable or type NONE): NONE

Precluded Courses: N/A

COURSE DESCRIPTION

The emphasis in this course is placed upon relations, functions and transformations, linear and quadratic functions and inequalities, exponential and logarithmic functions, trigonometry, polynomials and rational functions and conic sections.

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

- Solve algebraic equations
- Solve problems that involve linear and quadratic inequalities in two variables
- Analyze quadratic functions and determine the vertex, domain, range, direction of opening, axis of symmetry, X and Y intercepts
- Demonstrate an understanding of operations on, and compositions of, functions
- Demonstrate an understanding of factoring and graphing polynomial functions of degree greater than 2
- Graph and analyze rational functions
- Demonstrate an understanding of the effects of horizontal and vertical translations on the graphs of functions and their related equations
- Demonstrate an understanding of the effects of horizontal and vertical stretches on the graphs of functions and their related equations.
- Demonstrate an understanding of the effects of reflections on the graphs of functions and their related equations
- Graph and analyze exponential functions
- Demonstrate an understanding of logarithms
- Demonstrate an understanding of the product, quotient, and power laws of logarithms
- Graph and analyze logarithmic functions
- Solve problems that involve exponential and logarithmic equations
- Demonstrate an understanding of angles in standard position, expressed in degrees and radians
- Solve problems, using the six trigonometric ratios for angles expressed in radians and degrees

- Graph and analyze the trigonometric functions sine, cosine, and tangent to solve problems
- Solve, algebraically and graphically, first and second-degree trigonometric equations with the domain expressed in degrees and radians.
- Prove trigonometric identities, using reciprocal identities, quotient identities, Pythagorean identities

INSTRUCTION AND GRADING

Instructional (Contact) Hours:

Type	Duration
Lecture	39
Seminars/Tutorials	
Laboratory	
Field Experience	
Other (<i>specify</i>): office hours	1
Total	40

Grading System: Letter Grades Percentage Pass/Fail Satisfactory/Unsatisfactory Other

Specify passing grade: 50%

Evaluation Activities and Weighting (total must equal 100%)

Assignments: 5%	Lab Work: %	Participation: 5%	Project: %
Quizzes/Test: 25%	Midterm Exam: 30%	Final Exam: 35%	Other: % <i>Specify:</i>

TEXT(S) AND RESOURCE MATERIALS

Provide a full reference for each text and/or resource material and include whether required/not required.

Swokowski & Col. Precalculus: Functions and Graphs. Twelfth edition.

COURSE TOPICS

List topics and sequence covered.

Week	Topic	Chapter
Week 1	Introduction: Functions and graphs: Evaluating functions, finding domain, and range, identifying odd, and even functions exponents and radicals	2
Week 2	Linear functions	2
Week 3	Quadratic functions: Finding the Vertex, domain, range, end-behavior, equation of the axis of symmetry of a parabola, and graphing	2
Week 4	Operations with functions, finding the domains of $f \circ g(x)$, $g \circ f(x)$	2

Week 5	Absolute value functions and their graphs, circles, finding the center and the radius of a given circle	2
Week 6	Long division, synthetic division	3
Week 7	Polynomial functions of degree larger than or equal to 3, and their graphs, the factor theorem, the intermediate value theorem MIDTERM EXAM	3
Week 8	Rational functions, and their graphs	3
Week 9	Variation, direct variation, indirect variation	3
Week 10	Exponential and the natural exponential function	4
Week 11	Logarithmic and the natural logarithmic function	4
Week 12	Trigonometric functions, angles in a standard position, angles in degrees, and angles in radians	5
Week 13	Finding all six trigonometric ratios using the information provided in the question	5
Week 14	FINAL EXAM	

NOTES

1. Students are required to follow all College policies. Policies are available on the website at: [Coquitlam College Policies](#)
2. To find out how this course transfers, visit the BC Transfer Guide at: bctransferguide.ca

Last Revised: September 2024

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