COQUITLAM COLLEGE
Established 1982

# COURSE OUTLINE

**Last Revised:** September 2017

## COURSE INFORMATION

**Course Title:** Precalculus Algebra

**Course Number:** MATH 120

**Credits:** 3

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

**Total Hours:** 39

**Course Level:** ☒ First Year ☐ Second Year
☐ New ☐ Revised Course
☐ Replacement Course

**Department:** Mathematics

**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 with grade of C or Higher

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

**Precluded Courses:** N/A

## COURSE DESCRIPTION

A one-term pre-calculus course in algebra and analytic geometry necessary for studying the calculus of basic algebraic functions. It covers many but not all of the topics introduced at high school, with an emphasis on Grade 12 algebra. In particular, MATH 120 provides a thorough review of intermediate algebra, functions and graphing, as well as an introduction to the exponential and logarithmic functions and basic triangle and trigonometry. This course is not tied to the high school curriculum, but is designed to be a fast-paced review of many topics encountered at high school. The material is covered in greater depth, with an emphasis on speed and proficiency of algebraic manipulation, problem-solving and practical applications. The objective is to upgrade existing knowledge to the level required for calculus.

## LEARNING OUTCOMES

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

- Understand basic ideas of algebra: expressions, transforming expressions, equations.
- Demonstrate an understanding of the fundamental concept of a function and all of its properties (domain, range, composition, inverse etc.).
- Understand linear and quadratic functions, expressions for each and graphs for each. Use these functions for modeling. Solve linear and quadratic equations.
- Graph polynomial, absolute value, square root, rational, exponential and logarithmic functions. Shift and scale graphs of functions.
- Find zeroes of polynomials, be familiar with the fundamental theorem of algebra, and factor theorem
- Understand the concept of: exponential function and logarithmic function. Solve exponential and logarithmic equations and apply exponential and logarithmic equations to solve real world problems.
- Understand trigonometry in right angle tringle and solve applied problems using the basic trig functions.

## INSTRUCTION AND GRADING

Instructional (Contact) Hours:

| Type | Duration |
|---|---|
| Lecture | 39 |
| Seminars/Tutorials | |
| Laboratory | |
| Field Experience | |
| Other (*specify):* | |
| Total | 39 |

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

**Specify passing grade:** 50%

**Evaluation Activities and Weighting** (total must equal 100%)

| | | | |
|---|---|---|---|
| Assignments: % *Specify number of, variety, and nature of assignments:* | Lab Work: % | Participation: 5% *Specify nature of participation:* Attendance | Project: % *Specify nature of project:* |
| Quizzes/Test: 25% | Midterm Exam: 30% | Final Exam: 30% | Other: 10% Worksheets |

## TEXT(S) AND RESOURCE MATERIALS

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

College Algebra, 10th edition, by Michael Sullivan.

## COURSE TOPICS

List topics and sequence covered.

| Week | Topic |
|---|---|
| Week 1 | Real Numbers; Complex Numbers; Solving Equations; Solving Inequalities |
| Week 2 | Introduction to Functions; Function Notations; Domain; Range; Evaluations on Functions |
| Week 3 | Graphs of Functions; Properties of Functions |
| Week 4 | Linear Functions and their Properties; Quadratic Functions and their Properties |
| Week 5 | Polynomial Functions, and Graphs of Polynomial Functions |
| Week 6 | Finding the Real Zeros of Polynomial Functions |

| | |
|---|---|
| Week 7 | Factor Theorem and Remainder Theorem<br>**MIDTERM** |
| Week 8 | Rational Functions and their Graphs |
| Week 9 | One-to-One Functions; Inverse Functions and their Graphs |
| Week 10 | Exponential Functions, and their Graphs |
| Week 11 | Logarithmic Functions, and their Graphs; Properties of Logarithms |
| Week 12 | Solving Exponential and Logarithmic Equations |
| Week 13 | Trigonometry |
| 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