MATHEMATICS (MATH)

MATH 1020 Credits: 3
Precalculus Total Hours: 60
Math 1020 is intended to prepare students to take calculus for science, engineering, business, commerce and social programs. Emphasis is placed on the extensive study of polynomial, rational, exponential, logarithmic, trigonometric functions and their inverses.
Pre-requisite(s): Pre-calculus Mathematics 12 with a 'C-'; or VCC MATH 0983 and MATH 0993 both with a 'C-'; or Precalculus Mathematics 11 with a 'B'; or Foundations Mathematics 11 with a 'B'; or VCC MATH 0861 and MATH 0871 both with a 'B'; or VCC Math Precalculus Assessment test with a 60%

MATH 1100 Credits: 3
Calculus 1 Total Hours: 60
This course is designed to provide students with a fundamental knowledge of differential calculus. Topics include the concepts of limit and continuity; rates of change; basic differentiation rules; derivatives of algebraic and transcendental functions; applied optimization problems; implicit differentiation and related rates; the mean value theorem; linear approximations; curve sketching; simple differential equations and models; antiderivatives; simple parametric equations and polar coordinates.
Pre-requisite(s): Both MATH 0983 and MATH 0993 with a minimum grade of 'B', or MATH 1020 with a minimum grade of 'C', or Precalculus 12 with a minimum grade of 'B', or Math Precalculus Test with a minimum score of 22 out of 30, or equivalent
Prior Learning Assessment is available.

MATH 1105 Credits: 2.5
Appl Math for Hlth Sciences 1 Total Hours: 48
The course provides the student with the basic math skills necessary to succeed in their post-secondary health care-related education. Students will renew fundamental math skills such as calculations with fractions, decimals, percent, ratio and proportion; order of operations; conversions between units and systems; manipulating algebraic equations; creating and interpreting graphs and basic statistics. Emphasis will be placed on developing critical-thinking and problem-solving skills through application problems related to health sciences.
Prior Learning Assessment is available.

MATH 1111 Credits: 3
Introduction to Statistics Total Hours: 60
This course introduces the fundamental ideas of statistics that can be applied to any discipline. Topics include: collection, organization, and presentation of data, inference estimation, hypothesis testing, correlation and regression. The course is designed to analyze real-life data using statistical methods. A statistical software program will be used to facilitate the understanding of statistical concepts and analysis of data sets.
Pre-requisite(s): Foundations of Mathematics 11 with a 'C' or equivalent, or active registration with the British Columbia College of Nurses and Midwives (BCCNM)
Prior Learning Assessment is available.

MATH 1120 Credits: 3
Discrete Mathematics 1 Total Hours: 60
This course introduces students to mathematical logic, mathematical induction, relations and functions, basic counting techniques, probability, graphs and trees, with an emphasis on applications in computer science.
Pre-requisite(s): Precalculus 12 with a minimum grade of 'C' or MATH 1020 with a minimum grade of 'C' or VCC Math Precalculus Assessment Test (MPT) with a minimum 72%

MATH 1190 Credits: 3
Mathematics for Teachers Total Hours: 60
This is a first year course which explores the basic mathematical concepts with the aim of reviewing math curriculum that future BC elementary and middle school teachers require. Students are introduced to the concepts of sets, real numbers, arithmetic operations, geometry of simple objects, elementary probability, and elementary statistical measures and displays.
Pre-requisite(s): Precalculus 11 or Foundations of Mathematics 11 or MATH 0861 and MATH 0871 both with 'C -' or Basic Algebra Assessment test with a 55% or equivalent

MATH 1200 Credits: 3
Calculus 2 Total Hours: 60
This course is designed to provide students with a fundamental knowledge of integral calculus. Topics include antidifferentiation; the definite integral; the fundamental theorem of calculus, areas and volumes; integration techniques; improper integrals; applications of the integral; slope fields; numerical approximations; linear differential equations and applications; polynomial approximations; Taylor series, power series and calculus with parametric curves and polar coordinates.
Pre-requisite(s): MATH 1100 with a minimum 'C-' grade
Prior Learning Assessment is available.

MATH 1205 Credits: 2.5
Appl Math for Hlth Sciences 2 Total Hours: 48
A continuation of Applied Mathematics for Health Sciences 1, this course will enable students to further develop their critical thinking and problem-solving math skills through solving health care-related math problems such as dosage calculations, concentrations, dilutions, reconstitutions of solutions; working with linear equations, systems, functions and simple geometric objects with applications to everyday life problems.
Pre-requisite(s): Applied Mathematics for Health Sciences 1 with at least a 'C-'
Prior Learning Assessment is available.

MATH 1210 Credits: 3
Mathematics for the Arts Total Hours: 60
This course is intended for students in life sciences, social sciences, business, or economics degree programs. It explores the applications of mathematics through everyday, real-life examples. Students are introduced to the concepts of linear equations and functions, inequalities, systems, linear programming, set and graph theory, elementary probability, Markov processes and descriptive statistics.
Pre-requisite(s): Precalculus 11 or Foundations of Mathematics 11 or MATH 0861 and MATH 0871 both with a 'C-' or Basic Algebra Assessment test with a 55% or equivalent

MATH 1221 Credits: 3
Applied Linear Algebra Total Hours: 60
This course introduces students to linear equations, matrices, determinants, vector spaces and linear transformations and bases. The course also includes complex numbers, eigenvalues and eigenvectors; diagonalization as well as inner products and orthogonality; least squares problems. Applications involving matrix and vector calculations are emphasized.
Pre-requisite(s): MATH 1100 with a C-

MATH 2120 Credits: 3
Discrete Mathematics 2 Total Hours: 60
This course is a continuation of MATH 1120 (Discrete Mathematics 1). It introduces students to more advanced topics in graph theory, inclusion and exclusion, recurrence relations, generating functions, optimization and matching, with an emphasis on applications in computer science.
Pre-requisite(s): MATH 1120 Discrete Mathematics 1

MATH 2251 Credits: 3
Calculus 3 Total Hours: 60
This course explores the calculus of several variables and is intended for students in Science, Engineering and Computer Science degree programs. Students are introduced to the concepts of three-dimensional analytic geometry, vectors, partial differentiation, multiple integration and vector calculus. It is recommended that MATH 2251 be taken concurrently with or after MATH 1221.
Pre-requisite(s): MATH 1200 with a C- or equivalent

MATH 2310 Credits: 3
Ordinary Differential Equation Total Hours: 60
This course explores the solutions to ordinary differential equations and is intended for students in Science, Engineering, and Computer Science degree programs. Students will solve first- and second-order linear differential equations using appropriate techniques; analyze problems from the natural and physical sciences using differential equations; use Laplace transforms to solve initial value problems and integral equations; solve systems of first-order linear differential equations; classify ordinary differential equations according to order and linearity, and identify appropriate techniques for solving each; apply numerical methods to approximate solutions to differential equations; apply qualitative techniques such as phase plane analysis to describe solutions; explore series solutions for differential equations.
Pre-requisite(s): MATH 1200 with a C- and MATH 1221 with a C- or equivalent

MATH 2700 Credits: 3
Probab & Stats for Scie & Eng Total Hours: 60
This course explores the mathematical theory of probability and statistics and is intended for students in Science, Engineering, Computer Science and Business degree programs. Students are introduced to the concepts of descriptive statistics, laws of probability, probability distributions for discrete, continuous and jointly distributed random variables, laws of expectation, estimation, hypothesis testing, correlation and regression.
Pre-requisite(s): MATH 1200 with a C- or equivalent