Course Descriptions
Burnaby Central

MATHEMATICS

Students can meet the Mathematics graduation requirements through one of the pathways described below. All pathways are designed to provide students with mathematical understanding and critical thinking skills. It is the choice of topics through which those skills are developed that varies among the pathways.

CHECK POST-SECONDARY REQUIREMENTS FOR ENTRY TO SPECIFIC PROGRAMS

Pre-Calculus Mathematics Pathway (Grades 10 – 12)

This pathway is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into post-secondary programs that require the study of theoretical calculus. Topics include algebra and number, measurement, relations and functions, trigonometry, and permutations, combinations and binomial theorem. This pathway is intended for students who may wish to pursue mathematical-related studies at the post-secondary level and prepares students for the study of Calculus.

Foundations Mathematics Pathway (Grades 10 – 12)

This pathway is designed to provide students with the mathematical understandings and critical thinking skills identified for entry into post-secondary programs in the arts or the humanities. Topics include algebra and number, measurement, relations and functions, trigonometry, logic and reasoning, and financial literacy. This pathway **will not** prepare students for university calculus.

Workplace Mathematics Pathway (Grades 10 – 11)

This pathway is designed to provide students with the mathematical understanding and critical thinking skills identified for entry into the majority of trades and for direct entry into the work force. Topics include conversions, measurement, trigonometry, and financial literacy.

Mathematics 8
Foundations of Math 8 is the first course in secondary school Mathematics.   The units studied include number concepts and operations, patterns and relations, variables and equations, shape and space, statistics and probability, and financial literacy. The curriculum focuses on curricular competencies that include reasoning and analyzing, connecting and reflecting, communicating and representing, and understanding and solving.

Mathematics 9
This course is designed to consolidate and extend topics introduced in Mathematics 8. Topics include operations with rational numbers, square roots and exponents, polynomials and algebra, linear relations, geometry and statistics, and financial literacy. At the end of this course, students will be prepared for Foundations and Pre-Calculus 10 OR Apprenticeship and Workplace Mathematics 10.
Teachers may provide a recommendation to students at the end of this course as to which Mathematics 10 course would be best suited for them.

Foundations of Mathematics & Pre-Calculus 10
This course is designed to provide students with the mathematical understandings and critical thinking skills identified for post-secondary studies in both the arts and the sciences. Topics include applying trigonometric ratios to the right triangles, prime factorization, operations with powers, polynomials, functions and relations, systems of linear equations, arithmetic sequences, and financial literacy. At the end of this course, students are prepared for Foundations of Mathematics 11 and Pre-Calculus 11, or Workplace 11.

Workplace Mathematics 10
This option is designed to provide students with the Mathematical understanding and critical thinking skills identified for entry into the majority of trades and for direct entry into the work force. Topics include understanding and applying the metric and imperial systems, conversions, measurement of 2-D and 3-D objects, geometry and trigonometry, and the fundamentals of income, spending and debt. At the end of this course, students are prepared for Workplace 11.

Pre-Calculus 11
This course is designed for VERY STRONG students who are going into programs which require students to take theoretical calculus in university (for example, Sciences, Engineering, or Business). This course is accepted for entrance to many post-secondary institutions*. This course explores functions and relations, algebra, and trigonometry in depth to prepare students for Calculus. This course will lead to Pre-Calculus Mathematics 12.

Foundations of Mathematics 11
This course is designed to provide students with mathematical understandings and critical thinking skills identified for post-secondary studies in the arts or humanities. Topics include logic and reasoning, functions, geometry, and statistics. Although the course explores many abstract concepts including algebra, it will *not* prepare you for university calculus*. Students who successfully master the learning outcomes of this course may choose to continue to Foundations of Mathematics 12.
Students should speak with their counsellor about their post-secondary requirements.

Workplace Mathematics 11
The emphasis in this course is on consumer mathematics. Topics include measurement, geometry, data analysis, probability and statistics, formulae, and budgeting. This course will prepare students for the majority of trades and for direct entry into the work force. If students choose, they can take Apprenticeship Mathematics 12 after completing this course.

Computer Science 11
Technology is becoming one of the most important skills for 21st century job seekers. In this introductory computer science course, students will explore basic computer programming concepts, applying logical statements, modelling mathematical problems, and applying computational thinking to solve problems. Students will learn to code in Python, a widely used programming language in web development and app building, to create their own programs. This course does not require a prerequisite and is suitable for both beginner and intermediate computer users. It is strongly recommended that students have completed a grade 10 level mathematics course prior to the start of this course. It is highly recommended students take this course prior to taking AP Computer Science A.
Please note that this is an elective course and does not satisfy graduation requirements.

History of Mathematics 11 (NEW! – *Offered 2023/2024*)
This course delves into how the Mathematics concepts we know and use today came to be. Students will see who ideas evolved over the centuries, how math is a universal language, and how mathematics has benefitted society throughout the years. Advancements in Mathematics came around due to not only new members of the mathematical community, but also progressed as rudimentary tools and technology were developed.
Please note that this is an elective course and does not satisfy graduation requirements.
**This course will be offered every other year, alternating with Geometry 12.*

Pre-Calculus 12

This is a higher level of Mathematics which is required for entrance into many university-level programs* and prepares students for the study of calculus. Students will build on the concepts learned in Pre-Calculus 11 and will spend more time developing their knowledge of algebra, graphing, and the more formal generalizations of mathematics concepts.
Students should speak with their counsellor about their post-secondary requirements.

Foundations of Mathematics 12

The practical focus of the Foundations of Mathematics 12 pathway is designed to enable students to develop their mathematical knowledge, skills, and attitudes in the context of their lives and possible careers. There is increased emphasis on concrete activities and modelling, and decreased emphasis on symbol manipulation (algebra). The Foundations pathway begins in grade 10.

Apprenticeship Mathematics 12

This course is designed to provide students with the mathematical understandings and critical thinking skills needed for entry into the majority of trades* and for direct entry into the work force. The core curriculum consists of tools of measurement, visualizations, mathematics in the workplace, and financial literacy, including business investments and loans.
Students should speak with their counsellor about their post-secondary requirements.

Calculus 12

Calculus will introduce the student to the fundamentals of differentiation and limits, along with applications. Topics include graphing, maxima and minima, related rates, areas, and exponential functions. This course is a good introduction to university level calculus. An AP Calculus course is also available, at the culmination of which students may write an exam in May for university credit. Students who enroll in AP Calculus AB must also enroll in Calculus 12.

Geometry 12 (NEW! – *Offered 2023/2024*)

This mathematics course is an elective course. Students will conjecture, investigate, and discover properties and relations in geometry. This course covers geometric constructions, circle geometry, isometries and non-isometric transformations, non-Euclidean geometry, and more. Students will also look at the history of geometry across cultures and time.
***This course will be offered every other year, alternating with History of Mathematics 11.*

Statistics 12

In Statistics 12, we learn the integral role of statistics in research, decision making, and policy in society. Specific topics include formulating research questions, planning statistical studies, utilizing analysis and inference, and communicating statistical findings effectively. Students should have completed Foundations and Precalculus 10 prior to enrolling in this course.

AP Mathematics Courses

Please see the Advanced Placement course descriptions for descriptions on the AP math courses offered (AP Calculus, AP Statistics, and AP Computer Science).