Course Descriptions

Burnaby Central

MATHEMATICS

Students can meet the Mathematics graduation requirements through either 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.

Make sure the pathway you've selected satisfies any Post-Secondary entrance requirements for that specific program.

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.

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 starting fall 2018, financial literacy.

Foundations Mathematics Pathway (Grades 11 – 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 starting fall 2018, financial literacy. This pathway ***will not*** prepare students for university calculus.

Note: There is a new graduation requirement as Provincial Exams have been removed. Students will be required to write a *numeracy assessment* before graduation. This will be written when students are in grade 10, and may be rewritten twice. The numeracy assessment is scheduled for students by the school.

Grade 8

Mathematics 8
This is the first course in secondary school Mathematics. The units studied include number concepts and operations, patterns and relations, shape and space, variables and equations, statistics and probability, and financial literacy. The new curriculum also focuses on curricular competencies that include Reasoning and Analyzing, Understanding and Solving, Communicating and Representing, and Connecting and Reflecting.

Mathematics 8 Enriched
The purpose of Math 8 Enriched is to provide enrichment for students who excel in Mathematics. The intent of this course is to develop concepts at a deeper level than the Mathematics 8 course provides and to further enrich student experiences, prepare them to write math contests (such as the Gauss), and be better prepared for taking the Pre-AP Math and AP Calculus courses in the future. (Writing the Grade 7 Gauss contest in May is expected, and admission to this course is through an application process).

Grade 9

Mathematics 9
This course is designed to extend on topics from Mathematics 8. Topics include operations with rational numbers, exponents, polynomials and algebra, linear relations, shape and space, statistics, and financial literacy. At the end of this course, students will be prepared for Foundations and Pre-Calculus 10 OR Workplace 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*.

Mathematics 9 Enriched
The intent of this course is to develop concepts at a deeper level than Mathematics 9 provides. Teacher recommendation and participation in Math Contests will be taken into consideration for acceptance into Math Enriched classes.

Grade 10

Foundations of Mathematics and 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 sciences. Topics include applying trigonometric ratios to right triangles, prime factorization, operations with powers, functions and relations, systems of linear equations, arithmetic sequences, operations with polynomial expressions, and financial literacy. At the end of this course, students are prepared for Foundations of Mathematics 11 and Pre-Calculus 11, or Workplace 11.

Foundations of Mathematics and Pre-Calculus 10 Enriched
A continuation of the Mathematics 9 Enriched course, this course leads to Foundations of Mathematics 11 or Pre-Calculus 11. Teacher recommendation and participation in Math Contests will be taken into consideration for acceptance into Math Enriched classes.

Workplace 10
A continuation of the Mathematics 9 Enriched course, this course leads to Foundations of Mathematics 11 or Pre-Calculus 11. Teacher recommendation and participation in Math Contests will be taken into consideration for acceptance into Math Enriched classes. 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 graphing, primary trigonometric ratios, conversions, surface area and volume, angles, financial literacy, and statistics. At the end of this course, students are prepared for Workplace 11.

Grade 11

Pre-Calculus Mathematics 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.

Pre-Calculus Mathematics 11 Enriched
This course covers the same material as Pre-Calculus Mathematics 11, but in more depth and will prepare students for both Calculus 12 and AP Calculus. This course will lead to Pre-Calculus Mathematics 12. Teacher recommendation and participation in Math contests *may* be taken into consideration.

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 the 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.

Workplace Mathematics 11
The emphasis of this course is on consumer mathematics. Topics include measurement, geometry, data analysis, probability and statistics, formulae, and budgeting. This course will prepare students to take Apprenticeship and Workplace Math 12 if they wish.

Computer Science 11 (NEW!)
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 prior to the start of this course. It is highly recommended students take this course prior to taking AP Computer Science A.

Grade 12

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.

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 concepts learned in Pre-Calculus 11 and will spend more time developing their knowledge of algebra and the more formal generalizations of mathematical concepts.

Geometry 12 (NEW!)
This is a new Mathematics course being offered and is an elective course. Students will conjecture, investigate, and discover properties and relations in geometry. This is a rigorous course that covers geometric constructions, circle geometry, isometries and non-isometric transformations, non-Euclidean geometries, and more. Students will also look at some history of geometry across cultures and time.

Statistics 12
In Statistics 12, we learn the integral role of statistics in research, decision making, and policy in society. Specific topics of study 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.

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 calculus. An AP Calculus course is also available, at the culmination of which students may write an exam in May for first year university credit. Students who enroll in AP Calculus must also enroll in Calculus 12.