



North Vancouver Online Learning

Course Plan: Mathematics 11 Pre-Calculus

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Course Description:

OL Math 11 Pre-Calculus is the BC Provincial Pre-Calculus Mathematics 11 course offered in an online setting. The course follows the BC Provincial curriculum and satisfies the requirements for graduation and entrance into many post-secondary institutions or programs. 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, number, relations and functions and trigonometry. The seven mathematical processes (communication, connections, mental mathematics and estimation, problem solving, technology and visualization) are interwoven throughout the mathematical topics.

Course Expectations:

It is expected that students will be actively engaged in the online course material. This would include, but is not limited to, viewing online lessons and taking notes, working on practice assignment questions within each unit and completing the learning guide for each unit. Students should have regular access to a computer and have a functioning email address. Teacher-Student communication is essential to a successful course experience, so students need to be good online communicators. The most efficient way of communication is via the messaging system built into the Moodle course environment. Students need to be organized, disciplined and industrious self-motivated learners. Math 11 PC contains 9 units, 61 lessons, designed to be completed in 100-120 hours. The rate at which students can complete this course is dependent on the amount of time available for each student to dedicate to their studies. There is a course completion tracker provided at the start of the course, along with unit completion trackers, to help students meet their self-determined time lines. At times the course content may be challenging, so students are encouraged to get help and support; however, the onus is on the student to be actively engaged in the online course material in order to be successful.

Time Line

There is continuous enrollment into DL Math 11 PC and there is no specific end date. However, there may be external time restraints placed on the student by post secondary enrolment policies. For example, UBC may be moving towards course completion in early spring, and other institutions request that at least 50% of the course must be completed by March 1st. Other post secondary institutions may have similar timelines.

NOTE: It is the responsibility of the student to become familiar with the entrance timeline and demands of their post secondary of interest.

Enduring Understandings/Big Ideas:

By the end of this course students will be expected to:

- *Develop algebraic reasoning and number sense.*
- *Develop trigonometric reasoning.*
- *Develop algebraic and graphical reasoning through the study of relations.*

Specific Learning Outcomes:

<http://www.bced.gov.bc.ca/irp/pdfs/mathematics/WNCPmath1012/2008math1012wnccf.pdf> Pre-Calculus 11 (pages 77-89)

Course Content:

Unit 1 Absolute Value and Radicals	Demonstrate an understanding of the absolute value of real numbers. Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands. Solve problems that involve radical equations (limited to square roots).
Unit 2 Factoring Polynomials	Factor polynomial expressions of the form: <ul style="list-style-type: none">• $ax^2+bx+c, a \neq 0$• $a^2x^2-b^2y^2, a \neq 0, b \neq 0$• $a(f(x))^2+b(f(x))+c, a \neq 0$• $a^2(f(x))^2-b^2(g(y))^2, a \neq 0, b \neq 0$ where a, b and c are rational numbers.
Unit 3 Rational Expressions	Determine equivalent forms of rational expressions. Perform operations on rational expressions. Solve problems that involve rational equations (limited to numerators and denominators that are monomials, binomials or trinomials).
Unit 4 Quadratic Functions	Analyze quadratic functions of the form $y = a(x - p)^2 + q$ and determine the: vertex, domain and range, direction of opening, axis of symmetry, x - and y -intercepts. Analyze quadratic functions of the form $y = ax^2 + bx + c$ to identify characteristics of the corresponding graph, including: vertex, domain and range, direction of opening, axis of symmetry, x - and y -intercepts and to solve problems.
Unit 5 Solving Quadratic Equations	Solve problems that involve quadratic equations.
Unit 6 Solving Systems of Equations	Solve, algebraically and graphically, problems that involve systems of linear-quadratic and quadratic-quadratic equations in two variables. Solve problems that involve linear and quadratic inequalities in two variables. Solve problems that involve quadratic inequalities in one variable
Unit 7 Sequences and Series	Analyze arithmetic sequences and series to solve problems. Analyze geometric sequences and series to solve problems.
Unit 8 Trigonometry	Demonstrate an understanding of angles in standard position $[0^\circ$ to $360^\circ]$. Solve problems, using the three primary trigonometric ratios for angles from 0° to 360° in standard position. Solve problems, using the cosine law and sine law, including the ambiguous case.
Unit 9 Absolute Value and Reciprocal Functions	Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems. Graph and analyze reciprocal functions.

Student Learning Activities and Strategies:

- *Interactive Flash Video Lessons with Audio and Colourful graphics*
- *Note Taking Supplements to accompany the video lessons*
- *Practice Assignment questions for each lesson, with answers*
- *Worked out Video Solutions to every Practice Assignment question*
- *Formative lesson quizzes and unit quizzes*
- *Comprehensive Learning Guide for each unit, with answers*
- *Summative Unit tests and a Final exam.*
- *Full DL Centre access: computers, work space, and teacher support*

Assessment:

The course grade is calculated from Lesson Quizzes (5%), Unit Quizzes (5%), Unit Learning Guides (10%), Portfolio / Course Engagement (5%), Unit Tests (55%), Midterm, Project and Final Exam (20%).

Lesson-Quizzes 5%

These quizzes are short and designed to test your knowledge of the lessons. You may have a few tries at each quiz with the highest grade being used towards your grade. This is an uncontrolled test but is timed. Try to do the quizzes without assistance to see how well you know the material. This will help you when you get to a major test, which will be both controlled and worth a lot more marks.

Unit-Quizzes 5%

These quizzes are taken online at the convenience of the student. These quizzes are timed, so it is important to be prepared and cognizant of the time when writing the quiz. To ensure that you are ready to take a unit-quiz, review the content pertaining to the unit and be familiar with the Send-In assignment, practice assignments and solutions.

Unit Learning Guides 10%

There is a comprehensive learning guide provided at the beginning of each unit. These learning guides are designed to be completed, with full solutions, as students work their way through the online lessons. Once the learning guide has been completed, it is to be corrected using the answer key provided at the back. It is common practice for students to bring their learning guide with them when they come to the DL Centre to write a Unit Test. Any corrections or clarifications can then be made before the test is written.

Portfolio / Course Engagement 5%

The portfolio assessment is designed to give students an opportunity to gain credit for the work that they have been doing within the online course. The portfolio consists of a collection of notes, practice assignments, and study materials that accumulate during the participation part of the course. This collection of work is to demonstrate student engagement in the online course material. Note: active participation in the online lessons and course material is a requirement.

Unit Tests 55%

The Unit Tests are to be written under supervised conditions in the Distributed Learning Centre, room 411 Mountainside Secondary. When you are ready to write a Unit Test, schedule your test using the **Sign Up Genius** located on the Homepage and in the course. There are 9 Unit Tests to be written, a Midterm and a Final Exam. Note: students attending a SD44 High School may be able to make arrangements, in advance, to write their test at a satellite DL Centre in their Homeschool.

NOTE: In order to meet the prescribed learning outcomes for this course, you are required to pass every written unit test. If you receive a failing grade on any written test, the mark on your corresponding formative assignment will be excluded. You must contact your instructor to discuss a re-test option and to reinstate your formative assignment mark.

Unit 1 Absolute Value and Radicals
Unit 2 Factoring Polynomials
Unit 3 Rational Expressions
Unit 4 Quadratic Functions
Midterm Exam + Project (start)
Unit 5 Solving Quadratic Equations
Unit 6 Solving Systems of Equations
Unit 7 Sequences and Series
Unit 8 Trigonometry
Unit 9 Absolute Value and Reciprocal Functions
Final Exam + Project (Due)

The Distributed Learning Centre is open on Monday to Friday; check the DL Schedule on the main Homepage for specific hours of operation. It is not necessary that your teacher be there for you to write an exam, but it is important that you make arrangements with your teacher to ensure that your test will be available when you arrive at your scheduled time.

Midterm, Project and Final Exam 20%

There is a required Midterm, Project and Final Exam for this course. The Midterm and Final will be comprehensive exams covering material from the entire course. There is a Multiple Choice and Written (Non-Calculator) portion to each exam. Midterm and Final Exams will be written in the DL Centre once the course requirements have been completed. When you are ready to write the final exam, schedule your test using the Math Test Sign Up and contact your instructor via email to set up a time for you to write the test.

Evaluation:

Based on performance standards and criteria:

Learning Activity	Assessment Type	Percentage of final Mark
<i>Lesson Quizzes</i>	<i>Formative</i>	<i>5%</i>
<i>Unit Quizzes</i>	<i>Formative</i>	<i>5%</i>
<i>Unit Learning Guides</i>	<i>Formative</i>	<i>10%</i>
<i>Portfolio / Course Engagement</i>	<i>Formative</i>	<i>5%</i>
<i>Unit Tests</i>	<i>Summative</i>	<i>55%</i>
<i>Midterm, Project, Final Exam</i>	<i>Summative</i>	<i>20%</i>
Total		100%

Resources:

There is no textbook required for this course as all of the lessons, notes, assignments, practice quizzes and solutions are contained within the online course. If necessary, and on the recommendation of the teacher, there is a supplemental textbook associated with the course, **Mathematics 11 Pre-Calculus**. This optional resource can be picked up at anytime during the course along with a required deposit.

