

## Course Outline

This course is intended for students who intend to study calculus and related mathematics as part of post-secondary education. It builds on the topics studied in Grade 11 Pre-calculus and provides background knowledge and skills for the study of calculus in post-secondary institutions.

This course comprises a high-level study of theoretical mathematics with an emphasis on problem solving and mental math.

Here is a list of the eight major topics that we will be covering this year.

1. Polynomial Functions
2. Transformations of Functions
3. Trigonometric Functions
4. Trigonometric Equations and Identities
5. Radicals and Rationals
6. Permutations and Combinations
7. Exponents and Logarithms
8. Composition of Functions

You will be evaluated on the following items:

Provincial Exam

In-class assignments

Tests

In class assignments will be done after every few topics. They will be done individually and during class time. The questions will be based on daily assignments.

We will have a test at the end of every unit.

We will be having a provincial exam in January. It will be worth 30% of the overall grade.

We will be using Brightspace for our online platform. All notes, assignments and answer keys as well as communication will go through Brightspace.

**When you are absent, YOU are responsible for catching up!!**

## Materials

- Scientific calculator
- Binder and loose-leaf
- Pencils and erasers - I would prefer that assignments be completed in pencil.

## Class Expectations

1. It is your responsibility to show up for every class and be ready to work. Class will begin once the buzzer has sounded. If you are not in the classroom, you will be considered late and dealt with accordingly.
2. All students must show respect. This includes respect for your teacher, peers, the classroom, and materials.
3. Pay attention. When the teacher is talking, you are listening.
4. You will be given some class time to work on assignments, so use it wisely.
5. Cell phones are only permitted as needed in class.
6. All tests and inclass assignments must be written at the allotted times, unless it is impossible to do so. If you need to miss a test or assignment for any reason other than illness, and are aware of this in advance, you must notify the teacher BEFORE the test/assignment day to make alternate arrangements.
7. Any missed test or inclass assignment will be made up on the day you return to school.
8. Instructions given for days at home are expected to be completed.
9. Masks must be worn during class unless physical distancing (2m) is possible.

This will be a challenging course for some of you. DO NOT wait until it is too late to get help! If you have tried yourself and do not understand the material, do not hesitate to ask me for help. Anytime you are having difficulty with a topic make sure to come and get help immediately. I do not mind helping over a lunch hour, BUT do not leave it until the last minute.

**Let's have a great year!**

## Precal 40S Grading

Grades are calculated using the following percentages

30% Exam

70% term work – broken down as below

<u>Unit (%)</u>	<u>Outcomes covered</u>
Polynomial Functions (10)	R11, R12
Transformations of Functions (12)	R2, R3, R4, R5 R6
Trigonometric Functions (16)	T1, T2, T3, T4
Trig Equations and Identities (16)	T5, T6
Radicals and Rationals (10)	R13, R14
Permutations and Combinations (12)	P1, P2, P3, P4
Exponents and Logs (16)	R7, R8, R9, R10
Composition of Functions (8)	R1

### Outcomes:

T1: Demonstrate an understanding of angles in standard position, expressed in degrees and radians.

T2: Develop and apply the equation of the unit circle.

T3: Solve problems, using six trig ratios for angles expressed in degrees and radians.

T4: Graph and analyze the trig functions sine, cosine, and tangent to solve problems.

T5: Solve, algebraically and graphically, first and second degree trig equations with the domain expressed in degrees and radians.

T6: Prove trig identities using – reciprocal identities

- Quotient identities
- Pythagorean identities
- Sum or difference identities
- Double-angle identities

P1: Apply the fundamental counting principle to solve problems.

P2: Determine the number of permutations of  $n$  elements taken  $r$  at a time to solve a problem.

P3: Determine the number of combinations of  $n$  different elements taken  $r$  at a time to solve problems.

P4: Expand powers of a binomial in a variety of ways, including using the binomial theorem.

R1: Demonstrate an understanding of operations on and compositions of, functions.

R2: Demonstrate an understanding of the effects of horizontal and vertical translations of the graph of functions and their related equations.

R3: Demonstrate an understanding of the effects of horizontal and vertical compressions and stretches of the graph of functions and their related equations.

R4: Apply translations, compressions and stretches to the graphs and equations of functions.

R5: Demonstrate an understanding of the effects of reflections on the graphs of functions and their related equations, including reflections through the:  $x$ -axis,  $y$ -axis, line  $y=x$

R6: Demonstrate an understanding of inverses of relations.

R7: Demonstrate an understanding of logarithms.

R8: Demonstrate an understanding of the product, quotient and power laws of logarithms.

R9: Graph and analyze exponential and logarithmic functions.

R10: Solve problems that involve exponential and logarithmic equations.

R11: Demonstrate an understanding of factoring polynomials of degree greater than 2.

R12: Graph and analyze polynomial functions.

R13: Graph and analyze radical functions.

R14: Graph and analyze rational functions.

## Assessment:

### Creating the Grade:

- Grades will be based only on the demonstration of an individual student's knowledge and skills of the outcomes for each course:
  - Only items marked by the teacher will determine a student's grade
  - Grades are based on individual student achievement, not group achievement
- When determining a grade, the teacher will decide whether there is sufficient evidence of achievement. If not, the mark can be reported as an “*IN*” (incomplete). Teachers will determine with students and parents/guardians a plan for completion of work.

### Establish, communicate, and apply consequences for late and missing work:

Students must understand that there will be consequences for not completing assignments that provide evidence of learning or for submitting those assignments late. If, after establishing and clearly communicating expectations regarding assignments, setting and communicating timelines for assignments, and supporting student learning using the strategies provided above, student work is still late or missing; teachers will apply the following strategies:

- confer with the student and, where appropriate, with the student's parent/guardians about the reasons for not completing the assignment, and consider the legitimacy of reasons;
- develop an agreement with the student to complete the work;

If, after completing the steps above, the student does not hand in the assessment by the agreed upon deadline, a zero may be used as a mark as the student has not demonstrated any knowledge or skill of the outcome.

The consequence for not completing work is to complete the work. Late marks will not be subtracted from an assignment as it is purely punitive and doesn't measure learning. The assignment will either be completed or given a zero.

The full policy is available on the SCI website under “Student Handbook”.