



## Math 30-1 Course Outline 2023 - 2024

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**Room:** 117

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**Google Classroom Code:** oouvoxxg

### Text/Supplies:

- You will be invited to a google classroom that will have copies of all the teachers notes, assignments and links to extra practice.
- Supplementary material will be used where necessary.
- TI-83, TI-84, TI-inspire graphing calculator
- Fine tip whiteboard markers.

### Course Description:

The Math 10C □ Math 20-1 □ Math 30-1 course sequence is designed for students with both interest and aptitude in mathematics who are intending to pursue post-secondary studies at a university with a mathematics focus. Mathematics 10–20–30 emphasizes the theoretical development of topics in algebra, geometry, trigonometry and statistics up to a level acceptable for entry into such programs. Successful completion of Math 20-1 is a prerequisite for this course. Additionally, successful completion of Math 30-1 will allow students to enroll in Math 31.

### Course Curricular Outcomes:

Upon successful completion of this course students should...

1. Develop algebraic and graphical reasoning through the study of relations.
2. Develop trigonometric reasoning.
3. Develop algebraic and numeric reasoning that involves combinatorics.

### Units of Study:

#### Unit 1: Operations on Transformations & Functions

Sept 5 – Sept 26

- General Outcome: Develop algebraic and graphical reasoning through the study of relations.
- Specific Outcomes:
  - 1.1 Demonstrate an understanding of operations on, and compositions of, functions.
  - 1.2 Demonstrate an understanding of the effects of horizontal and vertical translations on the graphs of functions and their related equations:  $y = f(x - h)$  &  $y - k = f(x)$
  - 1.3 Demonstrate an understanding of the effects of horizontal and vertical stretches on the graphs of functions and their related equations:  $y = af(x)$  &  $y = f(bx)$
  - 1.4 Apply translations and stretches to the graphs and equations of functions:



- 1.5 Demonstrate an understanding of the effects of reflections on the graphs of functions and their related equations, including reflections through the: x-axis  $y = -f(x)$  & y-axis  $y = f(-x)$  & line  $y=x$   $y = f^{-1}(x)$  or  $x = f(y)$
- 1.6 Demonstrate an understanding of inverse of relations.

### Unit 2: Polynomial and Rational Functions

Sept 27 – Oct 20

- General Outcome: Develop algebraic and graphical reasoning through the study of relations.
- Specific Outcomes:
  - 2.1 Demonstrate an understanding of factoring polynomials of degree greater than 2 (limited to polynomials of degree  $\leq 5$  with integral coefficients).
  - 2.2 Graph and analyze polynomial functions (limited to polynomial functions of degree  $\leq 5$ ).
  - 2.3 Graph and analyze rational functions (limited to numerators and denominators that are monomials, binomials, or trinomials).

### Unit 3: Exponential and Logarithmic Functions

Oct 23 – Nov 8

- General Outcome: Develop algebraic and graphical reasoning through the study of relations
- Specific Outcomes:
  - 3.1 Demonstrate an understanding of logarithms.
  - 3.2 Demonstrate an understanding of the product, quotient, and power laws of logarithms.
  - 3.3 Graph and analyze exponential and logarithmic functions.
  - 3.4 Solve problems that involve exponential and logarithmic equations.

### Unit 4: Trigonometry

Nov 14 - Dec 1

- General Outcome: Develop trigonometric reasoning.
- Specific Outcomes:
  - 4.1 Demonstrate an understanding of angles in standard position, expressed in degrees and radians.
  - 4.2 Develop and apply the equation of the unit circle.
  - 4.3 Solve problems, using the six trigonometric ratios for angles expressed in radians and degrees.
  - 4.4 Graph and analyze the trigonometric functions sine, cosine, and tangent to solve problems.  $y = a \sin b(x-x) + d$  &  $y = a \cos b(x-x) + d$
  - 4.5 Solve, algebraically and graphically, first and second degree trigonometric equations with the domain expressed in degrees and radians.
  - 4.6 Prove trigonometric identities using:
    - reciprocal identities
    - quotient identities
    - Pythagorean identities
    - sum or difference identities (restricted to sine, cosine, and tangent)
    - double-angle identities (restricted to sine, cosine, and tangent)

### Unit 5: Radical Functions & Combinatorics

Dec 4 – Dec 22

- General Outcome: Develop algebraic and graphical reasoning through the study of relations. Develop algebraic and numeric reasoning that involves combinatorics.
- Specific Outcomes:
  - 5.1 Graph and analyze radical functions (limited to functions involving one radical).
  - 5.2 Apply the fundamental counting principle to solve problems.
  - 5.3 Determine the number of permutations of  $n$  elements taken  $r$  at a time to solve problems.



- 5.4 Determine the number of combinations on  $n$  different elements taken  $r$  at a time to solve problems.
- 5.5 Expand powers of a binomial in a variety of ways, including using the binomial theorem (restricted to exponents that are natural numbers).

□ Schedule may need to be adjusted as we work through the semester. The remainder of the semester will be spent on review for the diploma exam

**Examination Rules:** Students are responsible to bring all materials needed for an exam to class before the exam. Students will not be allowed to share materials. Cheating during an exam will not be tolerated. A deferred exam will be given only when exceptional circumstances prevent the student from writing at the scheduled time.

All unit exams will be secured (you will not get to keep them). If you wish, you may come in during a scheduled time to go over an exam in detail. This can be done once all students have written the test.

**Final Grade:**

The students' final grade in this course will be based on students' achievement of curricular outcomes and demonstration of skills required for effective learning.

|                      |     |                     |     |
|----------------------|-----|---------------------|-----|
| <u>School Grade:</u> |     | <u>Final Grade:</u> |     |
| Assignments          | 10% | School Grade        | 70% |
| Quizzes              | 40% | Diploma Exam        | 30% |
| Unit tests           | 50% |                     |     |

Each unit may also include the following, but will be formatively assessed only: whiteboard activities, presentations, and practice exams

The final grade represents the students overall achievement of the learner outcomes and reflects the students corresponding level of achievement. Credit is given for this course if the student's grade is a 50% or higher.

**APPEALS PROCESS:**

Should a situation arise where a student is not satisfied with an assessment outcome, first discuss the matter with the teacher outside of class time. If the teacher and student are unable to resolve the issue, then the teacher will approach another teacher to assess the assignment. (The teacher will not have prior knowledge of the student's name or the previous grade for the given assignment). If there is still an issue, a meeting will be set up between the student, teacher, parents and administration to resolve the matter. The commencement of an appeal must occur in a timely manner;



within 48 hours of receiving the marked assignment. In return, the appeal process will be completed as soon as possible.

**Reassessment Policy:**

The purpose of reassessment is to allow a student to remove an uncharacteristic grade. Individual reassessments will only be granted in extenuating circumstances.

To qualify for a reassessment the following requirements must be met:

1. You must show evidence of preparing for the original assessment
  - a. For example:
    - i. Completion of all formative and summative assessments (assignments/quizzes/projects).
    - ii. Completion of practice questions/formative assessments
    - iii. Actively engaged in lessons/class/learning activities and effective use of class time.
2. You must review the assessment and receive feedback in order to establish an understanding of your grade.
  - a. For example:
    - i. A student/teacher conference
    - ii. Post assessment self-reflection
3. You must provide evidence of enhanced learning of the outcomes.
  - a. For Example:
    - i. Completion of teacher tutorial sessions
    - ii. Completion of additional practice materials
    - iii. Exam Analysis - identifying errors/common mistakes/distractors
4. You must arrange to meet for reassessment in a timely manner.
5. The reassessment may be in an alternative form than the original assessment, but will assess the same outcome(s) from the programs of study.

**Late Policy:**

Late assessments will receive a grade of zero in PowerSchool. If a late assessment is handed in BEFORE it has been graded and given to the rest of the class, I will mark it like normal and a grade with feedback will be awarded. If an assessment is handed in AFTER it has been graded and given to the rest of the class, the zero in PowerSchool



will be exempted, but it will not be graded and feedback will not be provided. If an assessment is not handed in at all, the grade of zero will remain in PowerSchool.

### **NO BUS DAYS**

- In the event of buses not running; I will run a drop in google scheduled during regular time. This will be time to ask questions , clarify concepts, work on assignments, have group discussions, etc. No new material covered but dependent on the frequency of this situation this could change.

### **EXTRA HELP:**

I am available to help students after school or mornings by appointment. I expect you to come for extra help if you are struggling with or need clarification of any aspects of the course.