Canada World Education Centre
Course Outline

Course: Principles of Mathematics			
Grade: 10	**Type: Academic**	**Credit Value: 1**	**Course Code:MPM2D**
Teacher: J.F. Michaud		**Development Date: 04/15/2019**	
Course Reviser:Vizarat Shaikh **Date:**		**Prerequisite: MPM1D**	
Ministry Curr. Doc:The Ontario Curriculum Grades 9 to 12, Course Descriptions and Prerequisites, 2018			

Course Description

This course enables students to broaden their understanding of relationships and extend their problem-solving and algebraic skills through investigation, the effective use of technology, and abstract reasoning. Students will explore quadratic relations and their applications, solve and apply linear systems, verify properties of geometric figures using analytic geometry, and investigate the trigonometry of right and acute triangles. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

Overall Expectations for Student Learning

By the end of the course, students will:

1. determine the basic properties of quadratic relations; relate transformations of the graph $y=x^2$ to the algebraic representation $y=a(x-h)^2 + k$; solve quadratic equations and interpret the solutions with respect to the corresponding relations; solve problems involving quadratic relations.

2. Model and solve problems involving the intersection of two straight lines; solve problems using analytic geometry involving properties of lines and line segments; verify geometric properties of triangles and quadrilaterals using analytic geometry.

3. use their knowledge of ratio and proportion to investigate similar triangles and solve problems related to similarity; solve problems involving right triangles; using the primary trig ratios and the Pythagorean theorem; solve problems involving acute triangles using the sine law and the cosine law.

4. verify, through investigation facilitated by dynamic geometry software, geometric properties and relationships involving two-dimensional shapes, and apply the results to solving problems.

Outline of Course Content Unit:	Hours:
Unit 1. Coordinate Geometry: Equation of a line, length of line segment Unit 2. Linear Systems: Solving equations with substitution & elimination Unit 3. Introduction to Quadratic Functions: & Parabolas Unit 4. From Algebra to Quadratic Functions: Factoring, binomials Unit 5. Analysing Quadratic Functions: Sketching the graph Unit 6. Congruence and Similarity: Congruent Triangles Unit 7. Trigonometry: Tangent. Sine and Cosine Ratios	10 20 15 15 20 15 15

Teaching and Learning Strategies

Teachers use a variety of teaching strategies to maximize student learning. The following teaching strategies will be used in this course:

Helping students become self-directed.

**In order to address the unique learning styles of students in this course, a variety of activities and learning experiences should be offered, including, but not restricted to: questioning, demonstrations, role-plays, simulations, co-operative group learning, brainstorming, discussion, peer coaching, interviewing, reflective writing, reflective
thinking exercises, concept mapping, reading, tutoring, direct instruction, one-on-one teaching, and experimental learning.**

Teachers will find ways throughout the course for students to make authentic learning connections with their other courses, the school, local community and the world at large.

Assessment & Evaluation of Student Performance

Assessment & Evaluation

The primary purpose of assessment and evaluation is to improve student learning and to help students assume responsibility for their learning.

Mid-semester and final marks are determined through evaluations or Assessments of Learning, which typically occur towards the end of a unit and end of semester. During the learning process, information about a student's learning is gathered and used by the teacher and student to inform decisions that affect goal setting and teaching in the classroom. The data gathered as Assessment as Learning and Assessment for Learning do not carry a mark weight, but do play a crucial role in student success as they help inform the teacher about each student's progress. All types of assessments allow teachers to provide descriptive feedback that is clear, specific, meaningful, and timely to support improved learning and achievement.

Learning Skills and Work Habits (responsibility, organization, independent work, collaboration,

initiative, self-regulation) will be reported by a letter (E = Excellent, G = Good, S = Satisfactory, N = Needs Improvement). These skills and habits support a high level of success in meeting the course expectations in addition to contributing to the development of positive life and work skills for the future.

Considerations for Program Planning

Program Planning Considerations •Individual Education Plan: Accommodations to meet the needs of exceptional students as set out in their Individual Education Plan will be implemented within the classroom program. Additional assistance is available through the Special Education program. • The Role of Technology in the Curriculum. Using information technology will assist students in the achievement of many of the expectations in the curriculum regarding research, written work, analysis of information, and visual presentations.

- English As a Second Language (ESL): Appropriate accommodations in teaching, learning, and evaluation strategies will be made to help ESL students gain proficiency in English, since students taking ESL at the secondary level have limited time in which to develop this proficiency.

Resources

Technological Devices:

CWEC supports the use of technology to enhance learning, but the use of such electronic technology in the classroom is at the discretion of the teacher. Working together we can ensure the appropriate use of technology by all members of our school community