

ST. CLAIR CATHOLIC DISTRICT SCHOOL BOARD
STUDENT INFORMATION SHEET/OUTLINE OF COURSE OF STUDY

School: St. Christopher Secondary School

Department: Mathematics

Course Title: Functions and Applications (MCF 3M1)

Grade: 11

Course Type: University/College

Credit: One Full

Prerequisite: Grade 10 Academic (MPM 2D1) or Grade 10 Applied (MFM 2P1)

COURSE DESCRIPTION:

This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modeling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

HOW COURSE SUPPORTS THE ONTARIO CATHOLIC GRADUATE EXPECTATION:

Through the use of the Catholic course profile as well as additional resources (I.C.E. documents) the Ontario Catholic Graduate expectations will be addressed.

HOW THIS COURSE SUPPORTS THE COMPETENCIES OF CHOICES INTO ACTION:

Career Exploration Activities through classroom experience (page 19, Choices into Action)

1. Overall Expectation For Student Learning:

Through this course, the student will be expected to demonstrate knowledge, skills and values related to the following Strands:

Strand 1:

Quadratic Functions

- expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph;
- demonstrate an understanding of functions, and make connections between the numeric, graphical, and algebraic representations of quadratic functions;
- solve problems involving quadratic functions, including those arising from real-world applications.

Strand 2:

Exponential Functions

- simplify and evaluate numerical expressions involving exponents, and make connections between the numeric, graphical, and algebraic representations of exponential functions;
- identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications;
- demonstrate an understanding of compound interest and annuities, and solve related problems.

Strand 3:

Trigonometric Functions

- solve problems involving trigonometry in acute triangles using the sine law and the cosine law, including problems arising from real-world applications;
- demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical and algebraic representations of sine functions;
- identify and represent sine functions, and solve problems involving sine functions, including those arising from real-world applications.

2. Expectations Regarding Learning Skills:

It is expected that students will demonstrate the following learning skills (this is not intended to be an exhaustive list). Learning skills will be assessed according to criteria which have been clearly communicated to students and will be reported separately from student achievement of the curriculum expectations. The student's demonstrated learning skills in each course will be evaluated using the four-point scale

(E - Excellent, G - Good, S - Satisfactory, N - Needs Improvement)

- Strong work habits during class time
- Completed homework and assignments
- Organizational skills on a daily basis
- Initiative in all areas of the course
- Independent learning ability
- Team work ability
- Frequent review of concepts and skills

3. Support For Higher Learning:

Whenever accommodations are made to address student learning needs, or alternative or modified expectations are identified for a student, these accommodations, modifications, or alternative expectations will be outlined in an IEP and will be communicated to parents.

4. Course Breakdown and Assessment and Evaluation Strategies:

Unit Title/Description		Assessment & Evaluation Strategies	Unit Planning Notes
Unit 1	Introduction	checklists, assignments, tests	
Unit 2	Functions Through Quadratics (Broad strokes)	checklists, assignments, tests	
Unit 3	Investigating Quadratics	checklists, assignments, tests	
Unit 4	Quadratics (Highs and Lows)	checklists, assignments, tests	
Unit 5	Exponential Functions	checklists, assignments, tests	

Unit 6	Financial Applications of Exponential Functions	checklists, assignments, tests	
Unit 7	Acute Triangle Trigonometry	checklists, assignments, tests	
Unit 8	Trigonometric Functions	checklists, assignments, tests	

5. Key Dates, Special Events and Additional Considerations:

- to be announced by the teacher

6. Teaching/Learning Strategies:

Instruction in this course will include but not be limited to the following:

- use of technology tools: graphing calculators, computers
- presentation of homework solutions to class
- whole class activities
- pairs activities
- group work

7. Assessment and Evaluation of Student Learning:

Student achievement of the learning expectations will be evaluated according to the following breakdowns:

Categories of Knowledge, Skills, and Values	Weight %	
	Term Evaluation	Final Evaluation Activity/Exam
Knowledge/Understanding	40	40
Thinking/Inquiry/Problem Solving	15	15
Application	35	35
Communication	10	10
Breakdown of Final Marks (%)	70	30

8. Learning Resources:

Textbook: Mathematics 11, Nelson Publishing

9. School, Department & Classroom Policies:

The following policies apply to this course:

- use of student handbook: for reference and for time management

- ❑ **be prepared for class: paper, pencil, graph paper, calculator**
- ❑ **keep work complete and up to date**
- ❑ **correct all tests and assignments**