Course Profile

Mathematics 11, University/ College (MCF 3M)

Course Description:

This course introduces some financial applications of mathematics, extends students' experiences with functions. Students will solve problems in personal finance involving applications of sequences and sequences and series; investigate properties and applications of trigonometric functions; develop an understanding of inverses and transformations of functions; and develop facility in using function notation and in communicating mathematical reasoning.

Level:	Mixed (University/College)	**Credit Value:**	1.0	**Program Enhancement Fee:**
Pre-requisite:	MPM2D /MPM2P	**Department:**	Mathematics	

Textbooks & Resources:

- Growing Success: Assessment, Evaluation and Reporting in Ontario Schools, 2010
- Mathematics 11 Functions and Applications, Nelson (Replacement Cost:$85.00)
- The Ontario Curriculum, Grades 11-12 2007: Mathematics
- Printed packages provided by the teacher

Course Evaluation: Student Evaluation consists of three components…

1) Learning Skills & Work Habits:

Students are evaluated on 6 Learning Skills & Work Habits. They are:

- Responsibility
- Organization
- Independent Work
- Collaboration
- Initiative
- Self-Regulation

These six attributes are evaluated on a scale of Excellent (E), Good (G), Satisfactory (S) & Needs Improvement (N) and reported on the report card. They **are not** included in the course mark, unless specified in the curriculum expectations.

2) Term Mark (Assessment of Learning):

Student performance standards for knowledge and skills are described in the curriculum Achievement Chart. The curriculum is assessed in four categories:

- Knowledge and Understanding 30%
- Thinking and Inquiry 20%
- Communication 10%
- Application 10%

Evaluation of these four categories generates the term mark. **This term mark accounts for 70% of the final mark.**

It is the student's responsibility to submit evidence of learning.

3) Final Evaluation (Assessment of Learning):

The final evaluation, administered at or towards the end of the course is based on the evidence shown to the right. The final evaluation accounts for 30% of the final mark.

The final evaluation consists of (out of 30%):

exam 30%

Final Mark = 70% Term Mark + 30% Final Evaluation

Please retain this page in the front of your notebook for future reference.

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Course Outline:

Unit	Description	Approximate Length	Major Unit Evaluation
1)Quadratic Functions	Students will learn function notation, definition of relation and function, different ways of representing functions (tables, mapping, graphs, equations), definition of domain and range (including restrictions on domain), real-life application of linear and quadratic function}	8 days	Test
2)Transformations of Quadratic Functions	Students will use technology to investigate the quadratic function and its transformations, graph (without technology), identify vertex, axis of symmetry , direction of opening, intervals in increase/decrease, review domain and range related to transformation on the quadratic function	7 days	Test
3) Applications of Quadratic Functions	Students will learn the applications and restrictions on the domain and range in real-life situations, different forms of quadratic functions and review expanding and simplifying binomials. They will factoring quadratic functions and solve quadratic equations by factoring. They will relate roots of quadratic equations to the x-intercept of a quadratic function	15 days	Test
4) Solving quadratic equations by graphing and expressing in vertex form and the use of quadratic formula	Students will sketch the graph of the quadratic function by factoring (use x-intercepts to determine the vertex), apply to real-life situation (maximum/minimum problems}. They will express the quadratic function in vertex form by completing the square. Students will explore the algebraic development of the quadratic formula. They will apply the quadratic formula to solve quadratic equations. They solve problems resulting in quadratic equations arising from real-life situations	15 days	Test
5) Introduction to exponential functions	Student will review exponential laws, evaluate numerical expressions using exponent rules with integers and rational bases (multiplication, division, power of a power) where exponents are natural numbers, evaluate numerical expressions using exponent rules where exponents are integers and rational numbers (bases are integer and rational numbers They will graph exponential functions and describe key properties: domain, range , intercepts, increasing/decreasing intervals, asymptotes and why it is a function. They will distinguish exponential functions from linear and quadratic in a variety of ways (finite differences, graphs and equations). They will learn the different application of the exponential function to problems involving growth and decay (with and without technology) and explain any necessary restriction on the domain and range.	10 days	Test

6) Financial applications of exponential functions	Students will learn simple and compound interest for a given principal and a fixed interest rate, investigate and develop the formula for compound interest and present value and solve the problems for any of the unknowns (include different compounding periods). Students will also learn annuities and solve problems to determine the future and present value of an ordinary annuity, create amortization schedules for savings and loans (compare the effects of changing the conditions)	10 days	Test
7)Trigonometric functions	Students will review primary trigonometric ratios and solve problems related to applications in one and two dimensions (problems should include one and two right triangles) Students will also investigate and apply the sine law and cosine law using acute triangles only (with and without techology.)	7 days	Test
8)Trigonometric functions	Students will learn the key properties of periodic functions (cycle, period, amplitude, intervals of increase/decrease, domain/range, intercepts), graph $f(x) = \sin x$ (table of values, tech., unwrapping the unit circle), graph $f(x) = a \sin (x - d) + c$ (use tech. and transformations), identify key properties of $f(x) = a \sin (x - d) + c$ (cycle, domain, range, intercepts, amplitude, period, increasing/decreasing intervals), identify relationships that can be modeled as $\sin x$ function and solve problems.	7 days	Test

Note: The order of the units of study may change due to student needs and resources available during the course.

General Information

Refer to the agenda for Wexford CSA Academic Conduct & Evaluation policies.

How to seek extra help:
1)   Speak to your subject teacher and book a time to meet (Students & Parents).
2)   Speak to a Peer Helper
3)   Use the reliable sources on the Internet.
4)   Homework Help (Grades 7 – 10): http://homeworkhelp.ilc.org
5)   Math Coach: http://tdsb.na3.acrobat.com/mathcoach
6)   Speak to your Guidance Councellor (Students & Parents).who can guide you other sources.

{Recommended Resources -
•   www.explorelearning.com
•   www.math.com
•   www.resources.elearningontario.com
•   www.oerb.com