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COURSE OUTLINE
Functions and Relations in Mathematics 111/112

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Teachers: Bryan Carter, Denny Hamilton, Jill Johnston, and Peter MacDonald
Textbooks: Mathematical Modeling Book 2, Mathematical Modeling Book 3.
Extra Resources: Curriculum Document, Principles & Process 11, Principles & Process 12.

UNIT:	TIME-LINE:	TOPICS:
Applications of Trigonometry	2.5 weeks	• Solving Right Triangles • Angles of Elevation / Depression • Solving Oblique Triangles • Finding Area • Law of Sines • Law of Cosines • Applications Involving Trigonometry

UNIT:	TIME-LINE:	TOPICS:

Quadratics	7 weeks	*Section 1:*
		• Sequences (Finite / Infinite)
		  ➤ Arithmetic
		  ➤ Quadratic
		  ➤ Cubic
		  ➤ Geometric
		• Graphing Quadratic Functions (Parabolas)
		  ➤ Axis of Symmetry
		  ➤ Vertex
		  ➤ Maximum / Minimum
		  ➤ x-intercepts (Zeros of the function)
		  ➤ Domain
		  ➤ Range
		• Maximum / Minimum Area Problems (Part I)
		Section 2:
		• Properties of Graphs of Quadratic Functions (continued)
		  ➤ Vertical Stretch
		• Writing and Understanding Quadratic Equations
		  ➤ General Form
		  ➤ Standard Form
		  ➤ Transformational Form
		• Changing Between Forms of Quadratic Equations
		• Maximum / Minimum Area Problems (Part II)
		Section 3:
		• Quadratic Functions vs. Quadratic Equations
		• Solving Quadratic Equations (Finding the Roots)
		  ➤ Factoring
		  ➤ Completing the Square ⎫
		  ➤ Quadratic Formula ⎬ * Imaginary Numbers
		                         ⎭
		• Predicting the Number and Type of Roots of Quadratic Equations
		  ➤ Discriminant

UNIT:	TIME-LINE:	TOPICS:
Rate of Change	2.5 weeks	• Average Rate of Change • Rate of Change as Slope • Writing Equations to Represent Linear Graphs • Applications of Average Rate of Change • Instantaneous Rate of Change

UNIT:	TIME-LINE:	TOPICS:
Exponential Growth	4 weeks	• Exponential Functions • Exponential Growth and Decay ➤ Doubling Time / Half-Life • Exponents (Review of Basic Rules/Zero/Negative) • Solving Exponential Equations • Rational Exponents • Graphing Exponential Functions ($y = b^x$) • Solving Logarithmic Equations • Laws of Logarithms

UNIT:	TIME-LINE:	TOPICS:
Exam Review	3-5 days	• Key Topics Covered

EVALUATION ⇨ Math 112

Homework/Assignments	10%
Quizzes	20%
Tests	40%
Exam	30%

EVALUATION ⇨ Math 111

Homework	Incomplete ⇨ Deductions
Assignments	10%
Quizzes	20%
Tests	40%
Exam	30%