

MCR3U9 COURSE SUMMARY: GRADE 11 PRE-AP MATHEMATICS

Welcome to “MCR3U9, Grade 11 Pre-AP Mathematics.” The **emphasis** in this course will be on

- ❑ **Improving** your **problem-solving skills** and **expanding** your repertoire of **problem-solving strategies**
- ❑ **Honing** your **communication skills**
- ❑ **Enhancing** your ability to **think** in a **variety of different ways**
- ❑ **Developing** your ability to **work, think** and **learn independently**

Course Overview

- **Unit 0 – How to Understand Mathematics**

Focus on a Few Important Ideas Rather than Blindly Memorizing a Large Number of Facts, View Mathematical Relationships from a Variety of Different Perspectives, Learn in Depth, Review Exercises: Simplifying Algebraic Expressions, Factoring, Solving Linear and Quadratic Equations, Solving Linear Systems Graphically and Algebraically, Graphing Quadratic Functions, Applications of Quadratic Functions and Linear Systems

- **Unit 1 – Introduction to Functions**

Relations and Functions, Function Notation, Function as a Set of Ordered Pairs, Function as a Machine, Mapping Diagrams, Domain and Range, Parent (Base) Functions, Transformations, Inverses of Functions, Applications of Quadratic Functions, Using Transformations to Deepen Mathematical Insight, Avoiding Invalid Assumptions

- **Unit 2 – Exponential Functions**

Equations and Graphs of Exponential Functions, Characteristics of Exponential Functions, Transformations of Exponential Functions, Solving Exponential Equations, Modelling with Exponential Functions (e.g. Growth and Decay)

- **Unit 3 – Trigonometric Functions**

What is Trigonometry?, Trigonometric Ratios of Acute Angles in Right Triangles, Special Angles and Triangles, Applications of Trigonometry, Why Trigonometry Works, Radian Measure, Arc Length, Linear Velocity (Speed), Angular Velocity (Speed, Frequency), Angles of Rotation (Revolution), Trigonometric Ratios of Angles of Rotation, Trigonometric Functions and their Characteristics, Modelling Periodic Phenomena using Sinusoidal Functions, Trigonometric Identities, Solving Trigonometric Equations

- **Unit 4 – Polynomial and Rational Functions**

Interval Notation, Equations and Graphs of Polynomial Functions, Behaviour of Polynomial Functions, Writing Polynomial Functions in Factored Form, Transformations of Polynomial Functions, Solving Polynomial Equations of Degree Three or Higher, Factoring Polynomials, Solving Polynomial Inequalities, Rational Functions, Solving Rational Equations and Inequalities

- **Culminating Activities and Exam Review**

Evaluation		
Knowledge and Understanding (KU)	20%	EVALUATION POLICY Tests and other forms of in-class evaluations will always be announced ahead of time. Students who know that they will be absent for scheduled evaluations should arrange in advance to write at an alternate time. Failure to do so could result in an incomplete evaluation. Students who are absent for legitimate reasons (e.g. illness, attending a funeral, family problems, etc.) but who have not arranged in advance to write at an alternate time may do so upon presentation of a note from a parent or guardian.
Application (APP)	20%	
Thinking, Inquiry and Problem Solving (TIPS)	20%	
Communication (COM)	10%	
Final Examination: 30%	30%	

RESOURCES

- Course Notes: see www.misternolfi.com
- Textbook: *Precalculus* (9th Edition) by Ron Larson
- Desmos
- Google: There is a plethora of helpful resources that can be found simply by Googling!

HOMEWORK

- Homework is assigned on most school days. Students should expect to spend about one hour per day on homework.
- When formal homework is not assigned, students should review the course notes, the textbook and other resources.
- Students are also expected to create summary notes at the end of each school week.