

REDEEMER CHRISTIAN HIGH SCHOOL

Course Syllabus

MHF4U, Advanced Functions

Semester 1, 2017-2018

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COURSE DESCRIPTION

This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.

INTRODUCTION

This course focuses on the more abstract areas of math. These abstract skills are primarily ways of representing complex relationships. These functions (relationships) can be used to describe phenomena and processes in our world. By being able to describe functions, we are given a powerful predictive tool to bring to these problems. By being able to invent processes based on functions, we are, for example, able to manufacture products with great precision and efficiency. This language of representation increases our knowledge about the creation and increases our problem solving ability as we are faced with various problems in our role as stewards of creation and developers of culture.

This material is very important in fields like engineering, computer science and physics. As such this course is foundational for many post-secondary educational programs.

These topics are at the heart of the claims of mathematics to represent and define reality. It is important that we not only learn these powerful skills but are able to discern these mathematical voices and begin to reconcile these claims within a Christian world view.

This course will explore the standard expressions of mathematical enquiry that are found in a university setting. Students will solve mathematical questions and have opportunity to present and explain their solutions in written form. Students will also be introduced to the study of the history and philosophy of mathematics. The history and philosophy of math are the window through which students can begin to see math as an expression of human culture and thought as opposed to a sterile tool of limited value.

OUTLINE OF COURSE CONTENT

Resources: *Advanced Functions 12, Study Guide and University Handbook*, Thiessen and Werhun, McGraw-Hill Ryerson, 2008

As well various resources will be used throughout this course.

Unit 1 - Students will study the characteristics of **polynomial functions** and practice manipulating and graphing them.

Unit 2 - Students will study the characteristics of **rational functions** and how to graph them.

Unit 3 - Students will solve **trigonometric** equations and **identities**.

Unit 4 - Students will learn how to manipulate **trigonometric functions** and graph them.

Unit 5 – Students will learn the characteristics of **logarithmic functions** and solve problems with them.

Unit 6 - Students will examine **composition of functions** and **rates of change** of functions.

ASSESSMENT of STUDENT LEARNING

<i>Assessments for Learning</i>	<i>Assessments as Learning</i>	<i>Assessments of Learning</i>
Opener questions	Checking Homework	Unit Tests
Quizzes	Journal entries	Unit Problems
Learning skills observations	Peer assessments	Final Exam

Assessments of Learning for this course will span the four categories of Knowledge/Understanding, Thinking/Problem Solving, Communication and Application as outlined in the achievement chart for Mathematics.

Grading Summary:

Evaluation Instrument	Value	Approximate Value	Learning Category
Tests	45%	9%	Communication
		16%	Knowledge/Understanding
		15%	Thinking/Problem Solving
		5%	Application
Unit Tasks	25%	8%	Communication
		7%	Knowledge/Understanding
		6%	Thinking/Problem Solving
		4%	Application
Exam	30%	5%	Communication
		11%	Knowledge/Understanding
		11%	Thinking/Problem Solving
		3%	Application

Evaluation Phase	Learning Category	Approximate Value
Term Work	Communication	17%
	Knowledge/Understanding	23%
	Thinking/Problem Solving	21%
	Application	9%
Final Evaluation	Final Exam	30%

STUDENT EXPECTATIONS

Members of this class will treat the classroom, each other and the learning endeavour with respect as is fitting for a Christian. Respect for each other is the acknowledgment that the people around us are valued by God and should be treated with care. Respect for learning is an acknowledgment that God's world is important and is worth caring for and learning about. Respect for the classroom is an acknowledgment that this is God's school and that everything in it is a gift from Him and should not be treated lightly.

Student Responsibilities:

1. I will watch my words and speak to all others in the class with respect and encouragement.
2. I will arrive in class on time and prepared to work.
3. I will do my best to not distract others so they can learn.
4. I will do my best to stay caught up in my work but if I fall behind in my work or experience difficulties I will discuss this with the teacher so we can develop a recovery plan together.
5. I will do my best to hand in assignments on time. If I am experiencing difficulty I will talk to the teacher before it is too late. I realize that late assignments will have 10% deducted/day up to 5 days, then the assignment will receive a mark of zero, and I may be assigned to study hall every day until the assignment is turned in according to the RCHS Late Assignments Policy.

Teacher Responsibilities:

1. I, the teacher, will watch my words and speak to the students with respect and encouragement.
2. I, the teacher, will arrive on time with the lesson prepared.
3. The teacher will ensure that the success criteria for all assessments of learning are clearly outlined for the students.
4. The teacher will hand back assessments of learning promptly.

If there are **problems** with student or teacher not meeting their responsibilities then there will be a private discussion between the teacher and the students affected to seek a resolution and get things back on track. If the problems keep recurring then consequences may need to be applied according to the RCHS Discipline Policy or advice sought from the administration.