GEORGE S. HENRY ACADEMY COURSE OUTLINE
Grade 11 University-Preparation Mathematics

COURSE CODE	MCR3U	GRADE	11
TEACHER(S)	B. Herbst	CREDIT VALUE	1.0
DEPARTMENT	Mathematics, Numeracy, & Computer Science	PREREQUISITE	Grade 10 Academic Mathematics

COURSE DESCRIPTION:	This course introduces the mathematical concept of function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems. Additional information can be found at: http://www.edu.gov.on.ca/eng/curriculum/secondary/subjects.html

COMMUNICATION

Please direct all questions or concerns regarding student progress or program of study to the course teacher. Please call the main office to leave a message at 416-395-3240.

CONCRETE LEARNING RESOURCES	DIGITAL LEARNING RESOURCES
Functions 11 (McGraw-Hill Ryerson, Replacement Cost $100)	My School Day App - An app that allows you to stay up-to-date with in-class tasks and receive reminders about upcoming evaluations.
Texas Instrument scientific graphing calculators	Google Classroom, where students can post assignments and projects, collaborate, inquire, and communicate with each other and with the teacher.
	Desmos online scientific graphing calculator

GEORGE S. HENRY ACADEMY'S COURSE WORK POLICY

For each evaluation, the teacher will inform students of the **due date** and the **ultimate deadline**. The ultimate deadline is the last opportunity for students to submit an assignment for evaluation. Teachers may also use a variety of other methods for dealing with late and missed assignments at their discretion.

Strategies to assist students in meeting deadlines include:
- Peer tutoring
- Using the school app
- Using a personal agenda
- Seeking extra help from teachers

- Requesting for assistance with time management and organizational skills
- Getting help from parents/guardians
- Getting help from a caring adult in the school

ASSESSMENT AND EVALUATION OF STUDENT ACHIEVEMENT

Each course follows an achievement chart which enables teachers to make judgements about student work that are based on clear performance standards and on a body of evidence collected over time. Additional information can be found on the Ministry of Education website noted within the course description.

ACHIEVEMENT CHART CATEGORIES

Knowledge and Understanding (K & U): Subject-specific content acquired in each course (knowledge), and the comprehension of its meaning and significance (understanding)

Thinking (T): The use of critical and creative thinking skills and/or processes

Communication (C): The conveying of meaning through various forms

Application (A): The use of knowledge and skills to make connections within and between various contexts

COURSE WORK (70% of your overall grade)

Categories	%	Possible Assessments of Learning
K & U	20%	**Knowledge of content** (facts, terms, procedural skills, use of tools) **Understanding of content** (Understanding of mathematical concepts)
T	15%	**Use of planning skills** – understanding the problem (e.g., formulating and interpreting the problem, making conjectures) – making a plan for solving the problem **Use of processing skills** – carrying out a plan (e.g., collecting data, questioning, testing, revising, modelling, solving, inferring, forming conclusions) – looking back at the solution (e.g., evaluating reasonableness, making convincing arguments, reasoning, justifying, proving, reflecting) **Use of critical/creative thinking processes** (e.g., problem solving, inquiry)
C	15%	**Expression and organization of ideas and information** (e.g., clarity of expression, logical organization), using oral, visual, and written forms (e.g., pictorial, graphic, dynamic, numeric, algebraic forms; concrete materials) **Communication for different audiences and purposes** (e.g., peers, teachers) and purposes (e.g., to present data, justify a solution, express a mathematical argument) **in oral, visual, and written forms** **Use of conventions** (e.g., terms, symbols) in oral, visual, and written forms
A	20%	**Application of knowledge and skills in familiar contexts** **Transfer of knowledge and skills to new contexts** **Making connections within and between various contexts** (e.g., connections between concepts, representations, and forms within mathematics; connections involving use of prior knowledge and experience; connections between mathematics, other disciplines, and the real world)

FINAL EVALUATION (30% of your overall grade)

Type	Description	%
Culminating Task(s)		N/A
Final Exam	Written exam during exam week	30%

UNITS OF STUDY/COURSE ROAD MAP (subject to change)

Unit 1 – **Characteristics of Functions**

1.1 Functions, Domain and Range	
1.2 Functions and Function Notation	
1.3 Maximum or Minimum of a Quadratic Functions	**Assessment *as/for* Learning
1.4 Working With Radicals	
1.5 Solve Quadratic Equations	
1.6 Determine a Quadratic Equation Given its Roots	**Assessment *of* Learning
1.7 Solve Linear-Quadratic Systems	
1.8 Functions and Equivalent Algebraic Expressions	
1.9 Operations With Rational Expressions	
1.10 Horizontal and Vertical Translations of Functions	**Assessment *as/for* Learning
1.11 Reflections of Functions	
1.12 Stretches of Functions	**Assessment *of* Learning
1.13 Combinations of Transformations	
1.14 Inverse of a Function	**Assessment *as/for* Learning

Unit 2 – Exponential Functions

2.1 The nature of Exponential Growth	
2.2 Exponential Decay: Connecting to Negative Exponents	
2.3 Rational Exponents	**Assessment *as/for* Learning
2.4 Properties of Exponential functions	
2.5 Transformations of Exponential functions	**Assessment *of* Learning
2.6 Making Connections: Strategies for Applying Exponential Models	

Unit 3 – Trigonometric (Sinusoidal) Functions

3.1 Special Angles	
3.2 Co-terminal and Related Angles	
3.3 Reciprocal Trigonometric Ratios	**Assessment *as/for* Learning
3.4 Problems in two dimensions	
3.5 Problems in three dimensions	**Assessment *of* Learning
3.6 Trigonometric Identities	
3.7 Modeling Periodic Behavior	
3.8 The sine Function and the Cosine Function	**Assessment *as/for* Learning
3.9 Investigate Transformations of Sine and Cosine Functions	
3.10 Graphing and Modeling with: $y = a\sin[k(x - d)] + c$ and $y = a\cos[k(x - d)] + c$	
3.11 Data Collecting and Modeling	**Assessment *of* Learning
3.12 Use Sinusoidal Functions to Model Periodic Phenomena Not Involving Angles	

Unit 4 – Discrete Functions

4.1 Sequence as Discrete Functions	
4.2 Recursive Procedures	
4.3 Pascal's Triangle and Expanding Binomial Powers	**Assessment *as/for* Learning
4.4 Arithmetic Sequences	
4.5 Geometric Sequences	**Assessment *of* Learning
4.6 Arithmetic Series	
4.7 Geometric Series	
4.8 Simple and Compound Interest	**Assessment *as/for* Learning
4.9 Present Value	
4.10 Annuities	
4.11 Present Value of an Annuity	**Assessment *of* Learning

GEORGE S. HENRY ACADEMY'S LATE & MISSED EVALUATION POLICY

It is the responsibility of the student to make arrangements with their teacher for any missed course material and/or assignments. Extenuating circumstances will be considered on a case-by-case basis.

GEORGE S. HENRY ACADEMY'S ACADEMIC DISHONESTY POLICY

Cheating and plagiarism will not be condoned. For more information, refer to the Academic Honesty Policy found in the Student Handbook. The Student Handbook can be found in the George S. Henry Academy app.

SPECIALIST HIGH SKILLS MAJOR (SHSM) REQUIREMENTS

GRADE 11 AND 12 CREDITS	ENVIRONMENT	HEALTH & WELLNESS	HOSPITALITY &TOURISM
Major Credits	4	4	4
English *(including a CLA*)*	2	1	1
Mathematics *(including a CLA)*	1	1	1
Science or Social Sciences and Humanities *(including a CLA) (May be substituted with 1 coop credit)*	-	1	-
Business Studies or Science *(including a CLA) (May be substituted with 1 coop credit)*			1
Cooperative Education	2	2	2
TOTAL	**9**	**9**	**9**

*Contextualized Learning Activity