



MISSISSAUGA SECONDARY SCHOOL

MATHEMATICS DEPARTMENT – Grade 12 Advanced Functions

Course Code: MHF4U0

Pre-requisite: MCR3U0 or MCT4C0

Workbook: Advanced Functions 12 (\$12.00 replacement)

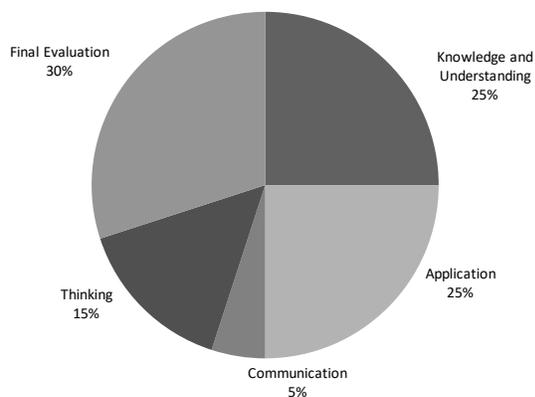
Course Description:

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.

Overarching Learning Goals:

1. Students investigate and reflect on the properties of various functions (including polynomial, rational, exponential/logarithmic and trigonometric functions) to compare, generalize and solve related problems.
2. Students understand the concepts of average and instantaneous rate of change graphically and algebraically and can determine the rate of change given various types of functions.
3. Students reflect on how transformations can be applied to functions, and can communicate what the result looks like both graphically and algebraically when a function is transformed.
4. Students can manipulate algebraic expressions and use graphical interpretations to solve equations and inequalities involving a variety of functions and prove or disprove conjectures through the application of reasoning skills.
5. Students use their understanding of the basic properties of functions to develop techniques they can use for combining functions both algebraically and graphically.
6. Students use the characteristics of functions to model and solve problems involving real world applications, including the use of technology for modelling and representing functions.

Course Weighting



Course Breakdown:

Unit 1: Exponential and Logarithmic Functions

Unit 2: Trigonometric Functions

Unit 3: Polynomial and Rational Functions

Unit 4: Characteristics of Functions

Assessment and Evaluation - Key Terms and Definitions:

Assessment for Learning: The ongoing process of gathering and interpreting evidence about student learning for the purpose of determining where students are in their learning, where they need to go and how best to get there (e.g. diagnostic pieces, observations, conversations, assignments, concept maps, interviews and progress monitoring). The information gathered is used by teachers to provide feedback and adjust instruction to help students focus their learning. Assessment for learning is a high-yield instructional strategy that takes place while the student is still learning and serves to promote learning.

Assessment as Learning: The process of developing and supporting student understanding of their own learning. Students are actively engaged in this assessment process: that is, they monitor their own learning (e.g. metacognitive questions, journals and self-assessment, problem solving templates, interviews, conferences); use assessment feedback from teacher, self, and peers to determine next steps; and set individual learning goals. Assessment as learning requires students to have a clear understanding of the learning goals and overall expectations as specified in the curriculum document.

Assessment of Learning: The process of collecting and interpreting evidence for the purpose of summarizing learning at a given point in time, to make judgements about the quality of student learning on the basis of established criteria, and to assign a value to represent that quality (e.g. quizzes, tests, presentations, projects, problem solving tasks). The information gathered may be used to communicate the student's achievement to parents, other teachers, students themselves and others. It occurs at or near the end of a cycle of learning. These measures will contribute to pivotal decisions that will affect a student's future pathways.

For more information, please refer to the Ontario Ministry of Education Grade 11 Curriculum Outline at:
<http://www.edu.gov.on.ca/eng/curriculum/secondary/math112curr.pdf>

MISSISSAUGA SECONDARY SCHOOL – Grade 12 Advanced Functions

<u>Achievement Chart Category</u>	<u>Evidence of Learning</u>		
	<u>Observations</u>	<u>Conversations</u>	<u>Products</u>
<u>Knowledge</u> Knowledge of content (e.g., facts, terms, use of tools) Understanding of mathematical concepts	Participation	Peer conferencing	Quizzes
<u>Thinking</u> Use of planning skills - understanding the problem - making a plan for solving the problem Use of processing skills -carrying out a plan - looking back at the solution Use of critical/creative thinking processes -reason mathematically to solve multi step problems	Problem solving group work Informal Presentations Interpretation Skills	Student-teacher conferencing Group work Classroom contributions Response Journals	Unit Tests Assignments Projects Summative Tasks Final Exam
<u>Communication</u> -Expression and organization of mathematical ideas and thinking, using pictorial, graphic, dynamic, numeric, algebraic forms and concrete models -Communication for different audiences and purposes in oral, visual, and written forms -Proper use of conventions, terminology and symbols	Written expressions Listening and speaking skills Self-assessment	Presenting solutions Responding to questions Asking relevant questions	
<u>Application</u> -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., between concepts, representations, and forms within mathematics; involving use of prior knowledge and experience; connections between mathematics, other disciplines, and the real world)	Appropriate use of manipulatives		

STUDENT ASSESSMENT, EVALUATION, AND REPORTING IN PEEL SECONDARY SCHOOLS

Success Criteria for completing this course:

Learning Skills: Each student is assessed not only on their academic achievement but also on their Learning Skills. These skills include: **Responsibility, Organization, Independent Work, Collaboration, Initiative, and Self Regulation**. Learning skills will not be factored into the grade for this course but will appear on the report card. It is important to remember that the development and consistent practice of these skills will influence academic achievement.

Attendance & Punctuality: Regular attendance to scheduled classes, and active participation in learning activities, will provide students with the experiences necessary to successfully complete this credit. Attending classes on time will ensure that there are no gaps in the student’s learning, demonstrate commitment to learning, and respect for self & others. Please refer to the student agenda for more information regarding the Attendance and Punctuality Policy.

Homework Completion: Consistent homework completion is essential for student success. Although students will be given some class time to initiate their homework, they should expect to have homework each night. Students should use unit outlines to plan effectively, manage time efficiently, and work ahead, if possible. Homework will be monitored according to your teacher’s instruction. Students should seek support as soon as possible when having difficulty with daily homework.

Missed Evaluation: Students will be given ample notice regarding the date for an evaluation. Students who are aware that they will be absent must discuss the situation with their teacher prior to the absence. An unexpected absence for a legitimate reason may need to be supported on the Math Department, **“REASON FOR ABSENCE”** form, which is available online at the course web site, as well as the MSS website (<http://schools.peelschools.org/sec/mississauga/Pages/default.aspx>). Upon approval, the student may be given an opportunity to write an alternate evaluation at the teacher’s convenience, in the specified classroom.

Late and Missed Assignments: Please see the Policy on Absence of Evidence of Student Achievement outlined in the student agenda

Plagiarism and Cheating: Please see the Policy on Plagiarism and Cheating outlined in the student agenda

Homework, Assignments and Effective Communication: To earn a credit students have a responsibility to submit sufficient evidence of understanding within established deadlines. It is in the student's best interest to submit evidence of learning at every opportunity that is provided, so that his/her grade accurately reflects what was learned. In the event that a student produces insufficient evidence in the key understandings for the course, the entire credit is at stake.

Student Signature: _____ **Parent Signature:** _____