St. Peter Catholic High School
Grade 12 Advanced Functions MHF4U

2014-2015

Teacher: Mr. Couturier & Mrs. Nanavati-Fong

Prerequisite Course: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation

Description and Overall Expectations: This course extends students' experience with functions. Students will 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 university.

Math Processes: The mathematical processes will be integrated into student learning throughout the course and include: problem-solving, reasoning and proving, reflecting, selecting tools and computational strategies, connecting, representing, and communicating.

Exponential and Logarithmic Functions: demonstrate an understanding of the relationship between exponential and logarithmic expressions, evaluate logarithms, and apply their laws to simplify numeric expressions; identify and describe key features of the graphs of logarithmic functions, make connections among the numeric, graphical, and algebraic representations of logarithmic functions, and solve related problems graphically; solve exponential and simple logarithmic equations in one variable algebraically, including real-world problems.

Trigonometric Functions: demonstrate an understanding of the meaning and application of radian measure; make connections between trigonometric ratios and the graphical and algebraic representations of the corresponding trigonometric functions and between trigonometric functions and their reciprocals, and use these connections to solve problems; solve problems involving trigonometric equations and prove identities.

Polynomial and Rational Functions: identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and simple rational inequalities.

Characteristics of Functions: demonstrate an understanding of average and instantaneous rate of change, and determine, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change at a given point; determine functions that result from the addition, subtraction, multiplication, division and composition of two functions, describe some properties of the resulting functions, and solve related problems; compare the characteristics of functions, and solve problems by modelling and reasoning with functions, including problems with solutions that are not accessible by standard algebraic techniques.

Course Resources:

- Textbook: Advanced Functions (Nelson) – replacement cost is $85.00
- The textbook is also available at www.mynelson.com (the password can be found inside the cover of your textbook)
- See handout for the list of websites for this course
- bring with you to class each day: binder, pencils, pens, eraser, ruler, loose leaf paper, graph paper, scientific calculator

Catholic Graduate Expectations: Our goal for all students is to experience an education based on our Catholic Graduate Expectations. We work in community to develop graduates that are:

- Discerning Believers Formed in the Catholic Faith Community
- Effective Communicators
- Reflective and Creative Thinkers
- Self-Directed, Responsible, Life-Long Learners
- Collaborative Contributors
- Caring Family Members

Responsible Citizens http://www.iceont.ca

Assessment, Evaluation and Reporting: The primary purpose of assessment and evaluation is to improve student learning. Students will understand what is expected of them, using learning goals, and success criteria, based on the overall expectations. Feedback (self, peer, teacher) supports learning, and plays a critical role in academic achievement and success.

The development of learning skills and work habits is a key indicator of future success. The following learning skills and work habits will be developed, assessed, and reported during this course:

1.	Responsibility	fulfills responsibilities and commitments *(e.g. accepts and acts on feedback)*
2.	Organization	manages time to complete tasks and achieve goals *(e.g. meets goals, on time)*
3.	Independent work	uses class time appropriately to complete tasks *(e.g. monitors own learning)*
4.	Collaboration	works with others, promotes critical thinking *(e.g. provides feedback to peers)*
5.	Initiative	demonstrates curiosity and an interest in learning *(e.g. sets high goals)*
6.	Self-Regulation	sets goals, monitors progress towards achieving goals *(e.g. sets, reflects goals)*

Group work supports collaboration, an important 21st century skill. This will be assessed only as a learning skill. Homework may also be assessed as a learning skill. Evaluation completed in class will be based only on individual student work. Regular attendance is important to support group work, various forms of feedback, and to allow students to demonstrate evidence of their learning. Students are responsible for providing evidence of their own learning (with references where required), in class, within given timelines. Next steps in response to academic integrity issues, such as lack of work completion, plagiarism, or other forms of cheating, range from providing alternate opportunities, to a deduction of marks.

The achievement chart identifies four levels, based on achievement of the overall expectations:

Level 1	achievement falls below the provincial standard	(50-59%)
Level 2	achievement approaches the provincial standard	(60-69%)
Level 3	achievement is at the provincial standard	(70-79%)
Level 4	achievement surpasses the provincial standard	(80-100%)

The report card grade will be based on evidence of student performance, including observations, conversations and student products. Consideration will be given to more recent evidence (skill development) and the most consistent level of achievement.

Mark Breakdown:

Term Work (70%) will include a variety of assessments designed to demonstrate students' development in their knowledge and understanding, thinking and inquiry, communication and application, of all overall expectations.

Summative evaluation (30%) takes place towards the end of the semester, is completed in class, and provides the final opportunity for students to demonstrate what they know, and the skills they have learned, based on the overall expectations. In Advanced Functions 4U, the summative evaluation will consist of a final exam (30%).

Awarding of Course Credit: Students who demonstrate evidence of achievement of overall expectations, ***and*** earn a mark of 50% or greater, will earn one credit for the course with the following exception:

Students who do not complete their summative evaluation (exam) will not earn their credit regardless of their mark.

Student and Parent/Guardian Acknowledgement

We have read the above course outline and are aware of the student responsibilities to attend class on a regular basis and to provide evidence of learning within the established timelines.

Student's Name (print): _____ Student's Signature: _____

Parent/Guardian Name (print):_____ Parent/Guardian Signature: _____