Sir Wilfrid Laurier Secondary School
Grade 11 University Preparation – MCR 3U
1.0 credits
Course Outline 2016 - 2017

Course Description

This course introduces the mathematical concept of the 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.

Strands and Overall Expectations

Characteristics of Functions • Demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations; • Determine the zeros and the maximum or minimum of a quadratic function, and solve problems involving quadratic functions, including those arising from real-world applications; • Demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical, and rational expressions.	**Exponential Functions** • Evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in a variety of ways; • Make connections between the numeric, graphical, and algebraic representations of exponential functions; • Identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications.
Discrete Functions • Demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle; • Demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems; • Make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities.	**Trigonometric Functions** • Determine the values of the trigonometric ratios for angles less than 360º; prove simple trigonometric identities; and solve problems using the primary trigonometric ratios, the sine law, and the cosine law; • Demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions; • Identify and represent sinusoidal functions, and solve problems involving sinusoidal functions, including those arising from real-world applications.

Evaluation

The final report card mark will be determined according to the **student's overall achievement of all of the course expectations** as set out in The Ontario Curriculum Mathematics documents. Students will be given **multiple and varied opportunities to demonstrate their achievement of the expectations within each strand** throughout the term (70% of final grade) as well as in the summative activity and final exam (total 30% of final grade).

*The student demonstrates, in **all** of the overall expectations, specified knowledge and skills with:*

a **high degree** of effectiveness	**Level 4** (80-100)	Achievement surpasses the provincial standard.
considerable effectiveness	**Level 3** (70-79)	Achievement represents the **provincial standard.**
some effectiveness	**Level 2** (60-69)	Achievement is approaching provincial standard.
limited effectiveness	**Level 1** (50-59)	Achievement falls much below the provincial standard.
	Below Level 1 (49 and below)	*Student does not achieve at least *limited effectiveness* in <u>all</u> overall expectations.

Guidelines for Missed Evaluations and Academic Fraud

1. Upon missing a test or presentation, students will be required at the teacher's discretion, either to:
    a) Complete the test or presentation immediately upon return to school; or
    b) Make arrangements with the teacher for a make-up; or
    c) Write the missed test Friday morning at 7:30 a.m. of that week.
    Failure to complete the missed test/presentation according to the negotiated schedule will result in a mark of zero.

    Note: Certain forms of formal summative evaluations (exams, summative project presentations or tasks, etc.) are time sensitive. This means they must be completed at and within a specific time. Students must be present and prepared for these summative evaluations. Any absence will result in a mark of **zero**, unless validated by an official certificate. (ex. Medical Certificate).

2. If an assignment is late or incomplete, a student will be provided with a second opportunity. Students who are provided with a second opportunity, **shall complete the required assignment within five school days**. If no evidence is forthcoming after five days, a mark of zero will be assigned.

3. Copied, borrowed or stolen work provides no evidence of learning. Teacher will document and archive the work in question. Students may be allowed to resubmit the assignment. The teacher and administrator will define the parameters for the completion of this task.

General Course Information

Students must bring the following materials to each class:

- textbook (when applicable)
- separate Math binder (to hold notes, tests, quizzes, handouts)
- pencil case (to hold pencils, erasers, ruler)
- scientific calculator, tablet/laptop/phone/iPod capable of running free apps
- lined and graph papers

The textbook that will be issued is Functions 11, *Nelson ($81.95 + HST). The student is responsible for the cost of replacement or repairs, if the text is lost, or damaged.*

Teacher Contact Information

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www.mathfitton.ca or @MathFitton