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COURSE OF STUDY OUTLINE

Department	<i>Mathematics</i>	Course Type	<i>University (U)</i>
Curriculum Leader	<i>B. Leszcz</i>	Grade	<i>11</i>
Course Title	<i>Grade 11 Mathematics</i>	Credit Value	<i>One</i>
Course Code	<i>MCR3U</i>	Prerequisites	<i>MFM2D</i>
Ministry Document	<i>The Ontario Curriculum. http://www.edu.gov.on.ca/eng/curriculum/secondary/math.html</i>		
Learning Resources	<i>Functions 11, Nelson 2008</i>		

Functions, Grade 11, (MCR3U) R.H. King Academy, TDSB

Curriculum Leader: B. Leszcz

Policy Document: *The Ontario Curriculum Grade 11 and 12 (2007 Revised)*

Prerequisites: Grade 10 Academic (MFM2D)

Value: 1 Credit

Textbook: Functions 11 Nelson 2008

Overall Goals 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.

Curriculum:

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 problems 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 problems 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 360° ; 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 problems arising from real-world applications.

Learning Skills:

The learning skills (Responsibility, Organization, Independent Work, Collaboration, Initiative, and Self Regulation) are critical for the achievement of the curriculum expectations and student success. Students are expected to attend every class, complete all homework and insure that assignments are completed and handed in on time.

Strategies:

Students will have the opportunity to learn in a variety of ways –individually, cooperatively, independently, with teacher direction, through hands-on experience, and through examples followed by practice. The approaches and

strategies used in the classroom to help students meet the expectations of this curriculum will vary according to the objectives of the learning and the needs of the students. It is important for students to take every opportunity to learn the material covered prior to the evaluation.

Evaluation:

Seventy per cent of the grade will be based on evaluations conducted throughout the course. Evaluations will be in the form of tests, quizzes, and assignments. Assignments for evaluation may include rich performance tasks, demonstrations (board work), and projects. This portion of the grade will reflect the student's most consistent level of achievement throughout the course.

Thirty per cent of the grade will be based on a final assessment administered towards the end of the course. The final exam allows the student an opportunity to demonstrate comprehensive achievement of the overall expectations for the course.

Students will be given numerous and varied opportunities to demonstrate the full extent of their achievement of the curriculum expectations (content standards) across all four categories of knowledge and skills.

Teachers will ensure that student learning is assessed and evaluated in a balanced manner with respect to these four categories:

1. **Knowledge and Understanding** Subject specific content acquired in each course, and the comprehension of its meaning and significance.
2. **Thinking** The use of critical and creative thinking skills and/or processes.
3. **Communication** The conveying of meaning through various forms.
4. **Application** The use of knowledge and skills to make connections within and between various contexts.

Term Grades for Provincial Reports Throughout the Year: The midterm mark will be based on the evaluations that have been conducted to that point in the course and will be preliminary and tentative. This mark will be based on the most consistent level of achievement to that point in time, but some of the overall expectations, strands, and units will not have been addressed and the student's grades will most likely change when the student's entire work is evaluated by the end of the course.

Evaluation Plan
Functions, Grade 11 (MCR3U)

Term Work- 70%

Final Evaluation – 30%

- Quizzes, assignments, projects 10%
- Tests 50%
- Independent Study Assignments* 10%

*At RH King one of our unique features is a focus on ISUs, or Independent Study Units. In Grade 11 Mathematics, an ISU is a small assignment that is given to students to complete., 4-5 times through the semester. The assignments are based upon extensions of the content being learned in the classroom at the time the assignment is given. In most cases students are given a week to complete the 1-1.5 hour worksheet. Support is provided during Clinic, after school, or even during class time, at the students' request. The intent is to facilitate learning the responsibility required to complete a task, on time, and learning to seek out help, should it be needed, to be able to complete the task. These skills promote the students' growth towards becoming independent learners.

Course Work

Unit 1: Review Pre-requisite skills	1 week
Unit 2: Polynomials/Rational Expressions (Ch 2)	1 week
Unit 3: Functions (Ch 1)	1 weeks
Unit 4: Quadratics (Ch3)	2 weeks
Unit 5: Trigonometry	2-3 weeks
Unit 6: Sinusoidal Functions	2-3 weeks
Unit 7: Exponential Functions	2 weeks
Unit 8 : Sequences and Series	2 weeks
Unit 9: Personal Finance	2 weeks
Review and Preparation for Evaluations:	1 week