

COURSE INFORMATION SHEET

DATE: SEPTEMBER, 2007

SECONDARY SCHOOL: Brebeuf College

DEPARTMENT HEAD: Mr. Michael Daoust

TEACHER: Mr. P. Briganti, Mr. L. Martelli , Mr. B. Ryan

DEPARTMENT: Mathematics



CURRICULUM POLICY DOCUMENT			
COURSE TITLE	Functions and Relations	COURSE CODE	MCR 3U1
PRE-REQUISITE	MPM 2D1	GRADE & TYPE	11Academic
FULL YEAR / SEMESTER	Semester	CREDIT VALUE	1

LISTED IN ORDER OF INSTRUCTIONAL DELIVERY

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. Work with radicals and Pascal's triangle is also introduced. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

STRAND / UNIT TITLES	HOURS	OVERALL EXPECTATIONS / UNIT DESCRIPTION
SERIES AND SEQUENCES AND THEIR APPLICATIONS	15	Students investigate arithmetic and geometric sequences and series. This knowledge serves as the basis for applications of personal finance. Students develop the formula for compound interest and solve problems related to compound interest and annuities. As skills are developed, students use graphic calculators to investigate the cost of borrowing when interest rates, compound periods, lending terms, etc., are varied. Students review and extend exponent laws and apply skills with linear and exponential functions.
QUADRATIC FUNCTIONS	15	Students investigate quadratic functions and related concepts from algebraic and geometric perspectives, in order to deepen their understanding and prepare them for further explorations of functions. Skills involving operations with polynomials and rational expressions are consolidated and extended. Students apply the method of completing the square in order to solve maximum/minimum problems involving quadratic functions. Algebraic and graphical methods are used in to determine the roots of quadratic equations.

RADICALS AND PASCAL'S TRIANGLE	10	Students investigate Pascal's Triangle and its application to simple binomial expansions. Radicals and the solving of radical equations is also undertaken.
TRIGONOMETRY	20	Students consolidate and extend trigonometric concepts first introduced in Grade 10 such as the Law of Sines and Law of Cosines. Students explore the trigonometric ratios for all angles from 0° to 360° as well as the ratios for special angles. Methods of proof are introduced and applied to verify trigonometric identities.
TRIGONOMETRIC FUNCTIONS	20	Students investigate the periodic nature and graphical properties of sinusoidal functions. Using technology, students explore the effects of simple transformations on their graphs and equations. Students apply these concepts to model authentic problems.
FUNCTION NOTATION, INVERSES AND TRANSFORMATIONS	20	Students, through authentic models, are introduced to the definition of a function and the associated notation. Students use graphing technology and paper-and-pencil tasks to investigate the properties of functions, their inverses and transformations of functions. The investigations are used to introduce and extend the use of function notation to inverses and transformations. Students explore the domain and range of functions, inverses and transformations.
EXPONENTIAL FUNCTIONS	10	Students explore the properties of exponential functions as well as their transformations. Mathematical modelling of some real life growth and decay problems is investigated.
TERM – 70%		FINAL – 30%
10 ≤ RELATIVE EMPHASIS / WEIGHTING ≤ 40		RELATIVE EMPHASIS / WEIGHTING
KNOWLEDGE/UNDERSTANDING	22.5	
INQUIRY/THINKING	15	
COMMUNICATION	10	
APPLICATION	22.5	
TERM TOTAL	70	FINAL TOTAL 30
		FINAL REPORT CARD GRADE CALCULATION – 100%
		TERM TOTAL + FINAL TOTAL = REPORT CARD MARK

ASSESSMENT FORMAT USED

WRITTEN		PERFORMANCE		OTHER	
e.g. Slogan		e.g. Manipulative Skills		e.g. Teacher Observation	x
Short Answer	x	Extended Investigations	x	Interviews	
Open/Free Response		Projects	x	Portfolios	
Essay/Journal		Concept Mapping		Skills Checklist	
Papers/Reports	x	Venn Diagrams			
Multiple Choice	x	Presentations			

RESOURCES	
TEXTBOOK	Functions and Relations by Addison-Wesley
STUDENT MATERIALS	TI 83 + graphic calculator
EXCURSIONS	
COMPUTER USE	
COURSE RELATED WEBSITES	

POLICIES & PROCEDURES	
PLAGIARISM	n/a
LATE ASSIGNMENTS	Assignments shall be accepted up until the day that they are returned by the teacher.
MISSED WORK	Teacher will be available after school upon request to help students catch up on missed work.
ABSENCES	No make-up tests shall be given for students returning from an absence.
HOMEWORK	Homework is assigned every night to consolidate and extend student learning. On average 40 minutes of homework is assigned per day.
TEACHER CONTACTS	See missed work section above. Mid-term reports are issued in November and April. Early warning letters for failing students are issued in early October and early March. Letters of concern at any time
EXTRA HELP	See missed work
REPORTING DATES	Final exams are held in January or June

LEARNING SKILLS CRITERIA			
IN EACH REPORTING PERIOD, REPORT ON THE QUALITY OF THE LEARNING SKILLS DEMONSTRATED BY THE STUDENT IN EACH OF THE CATEGORIES IDENTIFIED ON THE REPORT CARD USING THE FOLLOWING LETTER SYMBOLS.			
E–EXCELLENT	G–GOOD	S–SATISFACTORY	N–NEEDS IMPROVEMENT
SKILL: WORKS INDEPENDENTLY			
INDICATORS:			
<ul style="list-style-type: none"> • accomplishes tasks independently • accepts responsibility for completing tasks • follows instructions • regularly completes assignments on time and with care • demonstrates self-direction in learning • independently selects, evaluates, and uses appropriate learning materials, resources, and activities 	<ul style="list-style-type: none"> • demonstrates persistence in bringing tasks to completion • uses time effectively • uses prior knowledge and experience to solve problems and make decisions • reflects on learning experiences 		
SKILL: ORGANIZATION			
INDICATORS:			
<ul style="list-style-type: none"> • organizes work when faced with a number of tasks • devises and follows a coherent plan to complete a task • follows specific steps to reach goals or to make improvements • revises steps and strategies when necessary to achieve a goal 	<ul style="list-style-type: none"> • manages and uses time effectively and creatively • demonstrates ability to organize and manage information • follows an effective process for inquiry and research • uses appropriate information technologies to organize information and tasks 		
SKILL: INITIATIVE			
INDICATORS:			
<ul style="list-style-type: none"> • seeks out new opportunities for learning • responds to challenges and takes risks • demonstrates interest and curiosity about concepts, objects, events, and resources • seeks necessary and additional information in print, electronic, and media resources • identifies problems to solve, conducts investigations, and generates questions for further inquiry • requires little prompting to complete a task, displaying self-motivation and self-direction 	<ul style="list-style-type: none"> • approaches new learning situations with confidence and a positive attitude • develops original ideas and devises innovative procedures • attempts a variety of learning activities • seeks assistance when needed • uses information technologies in creative ways to improve learning for self or others 		
SKILL: TEAMWORK			
INDICATORS:			
<ul style="list-style-type: none"> • works willingly and cooperatively with others • shares resources, materials, and equipment with others • responds and is sensitive to the needs and welfare of others • solves problems collaboratively • accepts various roles, including leadership roles • takes responsibility for his or her own share of the work to be done • works to help achieve the goals of the group or the class • helps to motivate others, encouraging them to participate • contributes information and ideas to solve problems and make decisions 	<ul style="list-style-type: none"> • questions the ideas of the group to seek clarification, test thinking, or reach agreement • shows respect for the ideas and opinions of others in the group or class • listens attentively, without interrupting • in discussions, paraphrases points of view and asks questions to clarify meaning and promote understanding • recognizes the contribution of group members by means of encouragement, support, or praise • seeks consensus and negotiates agreement before making decisions 		
SKILL: WORK HABITS/HOMEWORK			
INDICATORS:			
<ul style="list-style-type: none"> • completes homework on time and with care • puts forth consistent effort • follows directions • shows attention to detail • uses materials and equipment effectively 	<ul style="list-style-type: none"> • begins work promptly and uses time effectively • perseveres with complex projects that require sustained effort • applies effective study practices 		

NOTE: The above chart is a reformatting of the skills identified in the Ministry of Education's *Guide to the Provincial Report Card, Grades 9 – 12 : Appendix C: pages 27 to 29*.