

COURSE INFORMATION SHEET

DATE: SEPTEMBER 2007

SECONDARY SCHOOL: *Brebeuf College*

DEPARTMENT HEAD: *Mr. Michael Daoust*

TEACHER: *Mr. M. DeThomasis, Mr. G. Sturino, Mr. M. Daoust*

DEPARTMENT: Mathematics



CURRICULUM POLICY DOCUMENT		<i>The Ontario Curriculum, Grades 11 and 12, Mathematics, 2000.</i>	
COURSE TITLE	Advanced Functions	COURSE CODE	MHF 4U
PRE-REQUISITE	MCR 3U	GRADE & TYPE	Grade 12 Academic
FULL YEAR / SEMESTER	Semester	CREDIT VALUE	1

COURSE DESCRIPTION (AS SPECIFIED IN MINISTRY OF EDUCATION POLICY DOCUMENT)

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.

LISTED IN ORDER OF INSTRUCTIONAL DELIVERY		
POLYNOMIAL AND RATIONAL FUNCTIONS	45	<ol style="list-style-type: none"> 1. identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; 2. identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; 3. solve problems involving polynomial and simple rational equations graphically and algebraically; 4. demonstrate an understanding of solving polynomial and simple rational inequalities.
EXPO-NENTIAL & LOG FUNCTIONS	20	<ol style="list-style-type: none"> 1. demonstrate an understanding of the relationship between exponential expressions and logarithmic expressions, evaluate logarithms, and apply the laws of logarithms to simplify numeric expressions; 2. identify and describe some 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; 3. solve exponential and simple logarithmic equations in one variable algebraically, including those in problems arising from real-world applications.
TRIG FUNCTIONS	20	<ol style="list-style-type: none"> 1. demonstrate an understanding of the meaning and application of radian measure; 2. 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; 3. solve problems involving trigonometric equations and prove trigonometric identities.
FUNCTION CHARACTERISTICS	25	<ol style="list-style-type: none"> 1. demonstrate an understanding of average and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change of a function at a given point; 2. determine functions that result from the addition, subtraction, multiplication, and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems; 3. 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.

STUDENT EVALUATION CRITERIA				
TERM – 70%		FINAL – 30%		FINAL REPORT CARD GRADE CALCULATION – 100%
10 ≤ RELATIVE EMPHASIS / WEIGHTING ≤ 40		RELATIVE EMPHASIS / WEIGHTING		TERM TOTAL + FINAL TOTAL = REPORT CARD MARK
KNOWLEDGE/UNDERSTANDING	22.5			
INQUIRY/THINKING	15			
COMMUNICATION	10			
APPLICATION	22.5			
TERM TOTAL	70	FINAL TOTAL	30	

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	x	Projects		Portfolios	
Essay/Journal		Concept Mapping		Skills Checklist	x
Papers/Reports		Venn Diagrams			
Multiple Choice	x	Presentations			

RESOURCES (EXAMPLES PROVIDED)	
TEXTBOOK	None to date
STUDENT MATERIALS	
EXCURSIONS	
COMPUTER USE	
COURSE RELATED WEBSITES	

POLICIES & PROCEDURES (EXAMPLES PROVIDED)	
PLAGIARISM	N.A.
LATE ASSIGNMENTS	Assignments accepted until the day returned by the teacher.
MISSED WORK	Teachers available before school at 8:30 AM every morning and after school upon request to help students.
ABSENCES	No make-up tests shall be given after an absence. A signed note from a parent is required by the Office when returning from an absence. Students are expected to catch up on missed work upon return to school.
HOMEWORK	Homework is assigned every night to consolidate and extend student learning. On average 30 to 45 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 on two set dates as directed by administration. Letters of concern may be sent home at any time.
EXTRA HELP	See missed work (above).
REPORTING DATES	Final exam held at the end of the course.

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* .