

## COURSE INFORMATION SHEET

**DATE:** SEPTEMBER , 2007  
**SECONDARY SCHOOL:** Brebeuf College  
**DEPARTMENT HEAD:** Michael Daoust  
**TEACHER:** Mr. E. Lena  
**DEPARTMENT:** Mathematics



<b>CURRICULUM POLICY DOCUMENT</b>			
<b>COURSE TITLE</b>	PRINCIPLES OF MATHEMATICS	<b>COURSE CODE</b>	MPM2E1
<b>PRE-REQUISITE</b>	MPM1D1 OR MPM1P1	<b>GRADE &amp; TYPE</b>	10Academic
<b>FULL YEAR / SEMESTER</b>	Semester	<b>CREDIT VALUE</b>	1

<b>COURSE DESCRIPTION</b>
<p>This course enables students to broaden their understanding of relations, extend their skill in multi-step problem solving, and continue to develop their abilities in abstract reasoning. Students will pursue investigations of quadratic functions and their applications; solve and apply linear systems; investigate the trigonometry of right and acute triangles; and develop supporting algebraic skills. In addition, as this is an enriched course, selected topics from Grade 11 will be covered including work with rational expressions, radian measure, trigonometric graphs and equations.</p>

LISTED IN ORDER OF INSTRUCTIONAL DELIVERY		
STRAND / UNIT TITLES	HOURS	OVERALL EXPECTATIONS / UNIT DESCRIPTION
MODELLING LINEAR SYSTEMS	10	In this unit, linear systems will be analysed both graphically and algebraically, with and without the use of technology. Activities in this unit provide a context for finding and interpreting points of intersection and lead students to solve linear systems by the methods of substitution and elimination.
ANALYTIC GEOMETRY	15	Students will use analytic geometry to solve problems involving the properties of line segments and to verify geometric properties of triangles and quadrilaterals. Specific investigations will use these line segment properties to develop formulas for the lengths and midpoints of line segments; determine the equation of a circles centred at (0, 0); solve multi-step problems involving properties of line segments; determine the characteristics of triangles and quadrilaterals having fixed co-ordinates; investigate and verify geometric properties of triangles and quadrilaterals having fixed co-ordinates; and develop communication and problem-solving skills.

<p style="text-align: center;"><b>MODELLING QUADRATIC EQUATIONS</b></p>	<p style="text-align: center;">35</p>	<p>This unit will introduce, explore, and apply the properties of quadratic functions. Students will collect, analyse, manipulate and display data from primary and secondary sources to model quadratic relationships. Students will use graphing technology and paper and pencil tasks to explore the characteristics, equations, and graphs of quadratic functions. Realistic applications will be used to develop the quadratic model and its properties. Algebraic techniques of simplifying, factoring, and solving quadratic equations will be developed throughout the unit. Students apply the method of completing the square in order to solve maximum/minimum problems involving quadratic functions.</p>
<p style="text-align: center;"><b>SIMILARITY AND APPLIED TRIGONOMETRY</b></p>	<p style="text-align: center;">15</p>	<p>In this unit, students will investigate the properties of similar and congruent triangles and their use in modelling realistic situations. Students will develop and investigate the primary trigonometric ratios using technology. Right-angled triangles will be used to measure the heights of inaccessible objects around the school. Students will apply trigonometric ratios, the sine law, and the cosine law to solve realistic problems in acute-angled triangles.</p>
<p style="text-align: center;"><b>PERFORMANCE TASKS</b></p>	<p style="text-align: center;">5</p>	<p>A series of performance tasks in which students will need to use the knowledge and understanding of content and procedures shall be administered throughout the year. In addition, preparation for math contests will be an on-going process throughout the semester.</p>
<p style="text-align: center;"><b>RATIONAL EXPRESSIONS and QUADRATICS</b></p>	<p style="text-align: center;">10</p>	<p>Skills involving operations with polynomials and rational expressions are consolidated, and then extended to the complex number system, which is introduced in this unit. Students apply the method of completing the square in order to solve maximum/minimum problems involving quadratic functions.</p>
<p style="text-align: center;"><b>TRIGONOMETRIC</b></p>	<p style="text-align: center;">20</p>	<p>Students investigate the relationship between degree and radian measure, and explore the use of the unit circle and special triangles to determine selected values of the primary trigonometric ratios. Methods of proof are introduced and applied to verify trigonometric identities. Students develop the skills to manipulate and solve trigonometric equations.</p> <p>Students investigate the periodic nature and graphical properties of the primary trigonometric functions. Using technology, students explore the effects of simple transformations on their graphs and equations. Students apply these concepts to model authentic problems.</p>

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

### ASSESSMENT FORMAT USED

<b>WRITTEN</b>		<b>PERFORMANCE</b>		<b>OTHER</b>	
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

<b>TEXTBOOK</b>	Mathematics 10 by Nelson, Math 11 by Addison-Wesley
<b>STUDENT MATERIALS</b>	TI 83 + graphic calculator
<b>EXCURSIONS</b>	
<b>COMPUTER USE</b>	
<b>COURSE RELATED WEBSITES</b>	

### POLICIES & PROCEDURES

<b>PLAGIARISM</b>	n/a
<b>LATE ASSIGNMENTS</b>	Assignments shall be accepted up until the day that they are returned by the teacher.

<b>MISSED WORK</b>	Teacher will be available before school at 8:30 AM every morning and after school upon request to help students catch up on missed work.
<b>ABSENCES</b>	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.
<b>HOMEWORK</b>	Homework is assigned every night to consolidate and extend student learning. On average 40 minutes of homework is assigned per day.
<b>TEACHER CONTACTS</b>	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
<b>EXTRA HELP</b>	See missed work
<b>REPORTING DATES</b>	Final exams are held in January or June

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

**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*.