

Forest Hill Collegiate Institute
Course of Study and Evaluation Statement
Foundations for College Mathematics, Grade 12

Note 1: All Ontario Ministry of Education curriculum documents with full course content information can be located at <http://www.edu.gov.on.ca/eng/curriculum/secondary/subjects.html>

Note 2: Detailed information on Ministry of Education assessment, evaluation, and reporting policy is provided in *The Ontario Curriculum, Grades 9 to 12: Program Planning and Assessment, 2000*, located at <http://www.edu.gov.on.ca/eng/curriculum/secondary/progplan912curr.pdf>

1. Course Details

- Program Area: Mathematics
- Date of Development: September 2010
- Course title: Foundations for College Mathematics, Grade 12: (MAP4C). Credit Value 1.0
- Prerequisite: Foundations for College Mathematics, Grade 11 or Functions and Applications, Gr 11 University/College Program
- Textbook: Foundations for College Mathematics, 12; McGraw-Hill Ryerson Ltd. 2009

2. Overall Goals

- Course Description:

This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyse data using statistical methods; solve problems involving applications of geometry and trigonometry; solve financial problems connected with annuities, budgets, and renting or owning accommodation; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.
- Overall Expectations are in the areas of Mathematical Models, Personal Finance, Geometry and Trigonometry and Data Management.

By the end of the course, students will:

- in **Mathematical Models**:
 - ❖ Evaluate powers with rational exponents, simplify algebraic expressions involving exponents, and solve problems involving exponential equations graphically and using common bases;
 - ❖ Describe trends based on the interpretation of graphs, compare graphs using initial conditions and rates of change, and solve problems by modelling relationships graphically and algebraically;
 - ❖ Make connections between formulas and linear, quadratic, and exponential relations, solve problems using formulas arising from real-world applications, and describe applications of mathematical modelling in various occupations.
- in **Personal Finance**:
 - ❖ demonstrate an understanding of annuities, including mortgages, and solve related problems using technology;
 - ❖ gather, interpret, and compare information about owning or renting accommodation, and solve problems involving the associated costs;
 - ❖ design, justify, and adjust budgets for individuals and families described in case studies, and describe applications of the mathematics of personal finance.
- in **Geometry and Trigonometry**:
 - ❖ solve problems involving measurement and geometry and arising from real-world applications;
 - ❖ explain the significance of optimal dimensions in real-world applications, and determine optimal dimensions of two-dimensional shapes and three-dimensional figures;
 - ❖ solve problems using primary trigonometric ratios of acute and obtuse angles, the sine law, and the cosine law, including problems arising from real-world applications, and describe applications of trigonometry in various occupations.
- in **Data Management**:
 - ❖ collect, analyse, and summarize two-variable data using a variety of tools and strategies, and interpret and draw conclusions from the data;
 - ❖ demonstrate an understanding of the applications of data management used by the media and the advertising industry and in various occupations.

- Specific Curriculum Expectations

Please refer to Ontario Ministry of Education curriculum document for details of Overall and Specific Expectations, found at <http://www.edu.gov.on.ca/eng/curriculum/secondary/math1112curr.pdf>

3. Program Planning Considerations

- *Individual Education Plan*: Accommodations to meet the needs of exceptional students as set out in their Individual Education Plan will be implemented within the classroom program. Additional assistance is available through the Special Education program.
- *The Role of Technology in the Curriculum*. Using information technology will assist students in the achievement of many of the expectations in the curriculum regarding research, written work, analysis of information, and visual presentations. The computer and the calculator are important problem-solving tools to be used for many purposes. Computers and calculators are tools of mathematicians, and students will be given opportunities to select and use the particular applications that may be helpful to them as they search for their own solutions to problems.
- *English As a Second Language (ESL)*: Appropriate accommodations in teaching, learning, and evaluation strategies will be made to help ESL students gain proficiency in English, since students taking ESL at the secondary level have limited time in which to develop this proficiency. Teachers will ensure that reading levels are appropriate to students' abilities and will strive for clarity in the use of mathematical terminology.
- *Cooperative Education and Other Workplace Experiences*: The knowledge and skills students acquire in this course will assist them in their senior level cooperative-education and work-experience placements related to this course. General information about cooperative education courses can be found at <http://www.edu.gov.on.ca/eng/document/curricul/secondary/coop/cooped.pdf>

4. Learning Skills

Learning Skills are skills and habits are essential to success in school and in the workplace. The Learning Skills evaluated are:

Responsibility, Organization, Independent Work, Collaboration, Initiative and Self-regulation. Teachers report achievement on the six Learning Skills using letter symbols: **E = Excellent, G = Good, S = Satisfactory, N = Needs Improvement.**

5. Academic Honesty: Cheating and Plagiarism

Students are expected to submit only their own original work on evaluations done in class or out of class. Plagiarism the passing off the ideas or writings of another as one's own. Cases of academic dishonesty (cheating and/or plagiarism) will be dealt with on a case-by-case basis, but each case will involve an investigation, communication with the student and his/her parent/guardian, and a mark of zero for the plagiarized work. Whether the student has an opportunity to demonstrate his/her learning in another assignment will be at the discretion of the teacher and/or Principal.

6. Teaching Strategies

Teachers use a variety of teaching strategies to maximize student learning. The following teaching strategies will be used in this course:

- *Direct Instruction* is highly teacher-directed. This strategy includes methods such as lecture, didactic questioning, explicit teaching, practice and drill, and demonstrations.
- *Indirect Instruction* is mainly student-centred. Indirect Instruction includes inquiry, induction, problem solving, decision making, and discovery.
- *Interactive Instruction* relies heavily on discussion and sharing among participants. Interactive instruction may include total class discussions, small group discussions or projects, or student pairs or triads working on assignments together.
- *Experiential Learning* is inductive, learner centred, and activity oriented. In Experiential Learning, students participate in an activity; critically look back on the activity to clarify learnings and feelings; draw useful insights from such analysis; and/or put learnings to work in new situations..
- *Independent Study* refers to the range of instructional methods which are provided to foster the development of individual student initiative, self-reliance, and self-improvement. The focus is on planned independent study by students under the guidance or supervision of a classroom teacher.

7. Assessment and Evaluation Strategies

The primary purpose of assessment and evaluation is to improve student learning. Assessment is the process of gathering information from assignments, demonstrations, projects, performances, and tests that accurately reflects how well a student is achieving the curriculum expectations in a course. As part of assessment, teachers provide students with feedback that guides their efforts towards improvement.

Evaluation refers to the process of judging the quality of student work on the basis of established criteria, and assigning a value to represent that quality. In Ontario secondary schools, the value assigned will be in the form of a percentage grade.

- In this course, the following evaluation strategies may be used: chapters/units' evaluation, assignments, investigations, in-class activities, final examination

8. Achievement Chart

The achievement chart provides a standard, province-wide method for teachers to use in assessing and evaluating their students' achievement. Students are evaluated according to the major categories or strands in each course. Ministry curriculum documents provide detailed description of student achievement levels.

In this course, students are evaluated in four categories, according to the weightings shown:

Knowledge/Understanding	Thinking/Inquiry	Communications	Application
30%	20%	20%	30%

9. 70% Mark on Course Work

- Students need to demonstrate achievement of all the overall expectations of the course. 70% of the final mark in the course will be based on work done prior to the culminating activities. Evaluations that are late, missing, and/or incomplete will affect a student's 70% grade. See FHCI Evaluation Policy as printed in the Student Agenda Book for information about late, missed, and/or incomplete assignments.

10. 30% Grade Based on Course Culminating Activities

- All students must take part in the culminating activities for each course at every grade and level of study. The steps to follow when a student is absent from one or more culminating activities is included in the FHCI evaluation policy as printed in the Student Agenda Book.
- Culminating activities that occur in class are held within the last three weeks of classes. Culminating activities that are formal examinations occur within the last nine days of the semester

11. Determining Marks for the Midterm Provincial Reports in November and April

This grade will be based on the evaluations that have been conducted to the midterm point in the course. Some of the Overall Expectations, categories/strands, and units will not have been addressed by the midterm, and the students' grades will most likely change when the students' entire work is evaluated by the end of the course.

12. Determining the Mark for the Final Report Card

The mark for the final will report card will be the sum of the 70% mark and the 30% mark.

Missed Evaluations If a student is legitimately absent for an evaluation, upon return to school, they must have a doctor's note or a note from their parent or guardian stating the reason for their absence. At that time, and at the convenience of the teacher, the student will write a makeup test. If a student does not have a valid reason for his/her absence, a mark of zero will be given. *Every effort will be made by the subject teacher to notify students well in advance of scheduled test dates.*

Definition of Legitimate Absence

- ✓ Illness with a doctor's note
- ✓ Death in the family
- ✓ Medical appointment (Advance notice required)
- ✓ Religious reasons (Advance notice required)
- ✓ School authorized field trip (Advance notice required)
- ✓ Court appearances (Advance notice required)

Teacher Contact: 416-393-1860 Ext. 20080

Unit 1: Chapter 1 – Measurement & Geometry	
1.1 Area	Pg. 11 # 4-9, 13, 14;
1.2 Volume	Pg. 23 #1, 2, 4 – 9, 13
1.3 Surface Area	Pg. 32 #3 – 7, 9, 11, 12
1.4 Optimize Perimeter and Area	Pg. 43 #3 – 12
1.5 Investigate Optimum Volume and Surface Area	
1.6 Analyse Optimum Volume and Surface Area	Pg. 60 #1, 3, 5, 6, 7, 9 + Handout
Chapter 1 Review	Pg. 64 # 1 – 16; Pg. 66 #1–12
Unit Evaluation	
Unit 2: Chapter 2 –	
2.1 Trig Ratios with Acute Angles	Pg. 80 #[1–5]a, 6–9, 11–13
Solving Right Triangles & Word Problems	Worksheets & Assignment
2.2 Trig Ratios with Obtuse Angles	Pg. 93 #1, 3, 4, 6, 7 – 12
2.3 Sine Law	Pg. 101 #1, 2, 4 – 7, 9 – 11, 14 – 16, Self-Check Wrksht
2.4 Cosine Law	Pg. 110 #1 – 4, 6 – 9, 11 – 13
Solving Triangles & Word Problems	Worksheets
2.5 Applications of Trigonometry (Word Problems)	Pg. 126 #1, 3, 5 – 11 & Worksheets
Chapter 2 Review	Pg. 130 #1 – 15; Pg. 132 #1–12
Unit Evaluation	
Unit 3: Chapter 3 – Two Variable Statistics	
Ch. 3 Prerequisite Skills	Read p.138-139; Do p.140 #1 – 6 & MHR BLM wrksht.
3.1 Two-Variable Data Sets	Read Pg. 142–146, Do Pg. 146 #1 – 3, 5 – 7, 9
3.2 Effective Surveys	Pg. 156 #1 – 3, 8 – 11, 13
3.3 Collect & Organize Data	Pg. 165 #1 – 8, (optional: 9 – 13)
Scatter Plots and Linear Correlation	Worksheet #1, 3, 5
3.4 The Line of Best Fit	Pg. 175 #1 – 5, 7
Linear Regression	Pg. 176 # 6, 8, 9, 11
Linear Regression	Pg. 187 #2ac, 4ac, 5, 6, 9
E-Stat & “Line of best fit”	Pg. 190 #1a, 2, 3, 5(only 1), 6, 13
Chapter 3 Review	Pg. 192 #1–10
Unit Evaluation	
Unit 4: Chapter 4 – Apply Data Management	
Ch. 4 Prerequisite Skills	p.198-199 #1 – 11 & MHR BLM worksheet
4.1 Statistical Measures	Pg. 205 #1ace, 2ac, 3ab(i), 4 Ginny/Barb, 5, 8ab
4.2 Statistical Indices	Pg. 218 #1, 2, 3a, 5, 7, 9
4.3 Interpret Statistics in the Media	p.231 #1 – 12
The Use and Misuse of Statistics	Pg. 239 #1, 2, 3ac, 4, 5aceg, 6, 8a, 11 [or 1-13]
4.5 Critical Analysis	Pg. 251 #1 – 4, 6, 7, 9 – 13
Chapter 4 Review	Pg. 256 #1a, 2, 3a, 4 John, 5, 6a, 8, 9ac, 10; Pg. 258 #1–7
Unit Evaluation	

Unit 5: Chapter 5 – Graphical Models		
	Trends And Predictions	Pg. 486 # 1, 2, 4, 5, 6, 8, 10–14
	5.1 Linear Models	Pg. 276 #2–4, 6, 8, 10, 11
	5.2 Quadratic Models	Pg. 289 #1, 2, 4, 6, 8
	5.3 Exponential Models	Pg. 301 #3–5, 7, 9
	5.4 Analyse Graphical Models	Pg. 316 #3, 5, 6, 9
	5.5 Select a Mathematical Model	Pg. 325 # 1 - 5
	Chapter Review	Pg. 332 #1– 8
	Review	Pg. 334 # 1–7
	Unit Evaluation	
Unit 6: Chapter 6 – Algebraic Models		
	6.1 Exponent Laws	Pg. 349 #1ac, 4ac, 5ac, 7ac, 9ac, 10ac, 12, 13
	6.2 Rational Exponents	Pg. 359 #[1–7]ac, 8, 9, 11, 13
	6.3 Represent Exponential Expressions	Pg. 365 #[1–7]ace, 8, 10
	6.4 Exponential Equations	Pg. 373 #[1–3]ac, [5–7]a, 8, 9, 13
	6.5 Exponential Models	Pg. 385 #1, 2, 5, 7, 9
	Chapter Review	Pg. 390 #1ac, 2ac, 3, [4–7]ac, 8, 9ac, 10ac, 12, 13a, 14, 16
	Review	Pg. 392 #1–14
	Unit Evaluation	
Unit 7: Chapter 7 – Annuities and Mortgages		
	7.1a Annuities	Pg. 409 #1, 2, 4, 7, 12, 17
	7.1b Present Value of an Annuity	Pg. 409 #3, 5, 6, 9, 10a, 13, 16
	7.2 Conditions of an Annuity	Pg. 418 #7–10
	7.3 a Mortgages and Amortization	Pg. 427 #5, 7 – BY HAND
	7.3b Mortgage / Loan Payments	Pg. 427 # 5, 7, 8, 9
	7.4 Conditions of a Mortgage	Pg. 434 #9, 10
	Chapter 7 Review	Pg. 438 #1–3, 4b, 5–6, 8–11, 13
	Review	Pg. 440 #1–9
	Unit Evaluation	
Unit 8: Chapter 8 –		
	8.1 – Savings Plans	Pg. 451 #1 – 8, 10, 12
	8.2 – Cost of Renting a Home	Pg. 458 #1, 2, 4, 6, 8, 9, 10
	8.3 – Cost of Owning a Home	Pg. 465 #[1–2]ac, 4, 7, 11, 9
	8.4 – Living Expenses (Designing Monthly Budgets)	Pg. 472 #2, 3, 6, 10
	8.5 – Case Studies	Pg. 478 Case Studies 1, 2, 3
	Good or Bad Credit –Discussion	Pg. 482 #1, 3, 4, 6, 7, 9 – 11
	Chapter 8 Review	Pg. 484 #1–8
	Unit Evaluation	
	Exam Review and Summative	Cumulative Reviews: Ch. 1 & 2: p. 134 #1 – 10 Ch. 3 & 4: p. 260 #1 – 8 Ch. 5 & 6: p. 394 # Ch. 1 – 8: p. 488 # College Preparation Tests: pgs. 137, 263, 397, 487

Note: Homework and Evaluation schedule may change depending on the needs of the students and changes due to scheduling of assemblies, field trips, etc.