**EAST YORK COLLEGIATE INSTITUTE**

**MFM2P Course Outline 2013-2014**

This Course Outline is based upon the Ministry of Education and Training Ontario Curriculum for Grade 10 Applied Mathematics as per the revised document of 2005.

***Board:*** Toronto District School Board ***School:*** East York Collegiate Institute ***Curriculum Leader:*** R. Singh

***Developing Teacher:*** M.Atzemis, A. Chou, M.Datta, O.Plaginakos

***Date of Revision:*** June 2012

***Course Title:*** Foundations of Mathematics, Grade 10, Applied

***Grade:*** 10

***Course Code:*** MFM2P

***Credit Value:*** 1.0

***Pre-requisite:*** MFM1P or MPM1D

***Textbook:*** Foundations of Mathematics 10, McGraw – Hill Ryerson (2007)

***Resources:*** Student Workbook for Foundations of Mathematics 10 (2008) Teacher’s Resource Binder & Computerized Assessment Bank TIPS4RM Materials (2006)

Graphing Calculators & Geometer’s Sketchpad

Pre-Algebra & Algebra with Pizzazz

**Course Description**

This course enables students to consolidate their understanding of linear relations and extend their problem-solving and algebraic skills through investigation, the effective use of technology and hands-on activities. Students will develop and graph equations in analytic geometry; solve and apply linear systems, using real-life examples; and explore and interpret graphs of quadratic relations. Students will investigate similar triangles, the trigonometry of right triangles, and the measurement of three-dimensional figures. Students will consolidate their mathematical skills as they solve problems and communicate their thinking. Throughout the course, students will engage in the following processes: Problem Solving, Reasoning and Proving, Reflecting, Selecting Tools and Computational Strategies, Connecting, Representing, and Communicating.

**Strands**

Trigonometry 18 periods Modelling Linear Relations 32 periods Measurement 13 periods Quadratic Relations of the Form ***y = ax2 + bx + c*** 32 periods

**Program Planning Considerations**

***Exceptional Students****:* Additional time will be allowed for tests. Additional accommodations will be provided in consultation with the Guidance, Special Education and ESL departments.

***Technology:*** Manipulatives, Graphing Calculators, and Geometer’s Sketchpad will be utilized for hands-on and technology-related applications.

***Career Education:*** Links to related fields will be established throughout the course. ***Co-operative Education****:* These will be provided in association with Guidance Department. ***Mathematics Anxiety****:* Attention will be addressed according to the following:

• Cultural perspectives

• Positive reinforcements

• Variety of assessment techniques

• Group structures

• Consideration for Learning Styles

**Learning Skills**

Assessment of the learning skills will be done on an ongoing basis throughout the academic year by observations of students at work, checklists and interviews. This will include:

• Classwork/homework (Work habits, homework and organization)

• Completed work and seeking assistance (Organization and initiative)

• Persistence and independence at tasks (Working independently and initiative)

• Extension of task (Organization and initiative**)**

• Achievement of group goals (Team work)

**Assessment Strategies**

A variety of teaching/assessment strategies to address students’ needs will be used during the school year. Formative assessments will be ongoing through out the academic year. These may include:

• Diagnostic assessment

• Formative assessment

• Performance assessment

• Portfolio assessment

• Rubrics

• Checklists

**Term Summative Evaluations (70% Term Work)**

• Tests, quizzes, tasks and other forms of term summative evaluations will occur throughout the academic year at the end of units of work as outlined in the accompanying course outline.

• Students will be provided with reasonable opportunities to master skills relating to the achievement of the curriculum

expectations before assessment and evaluation occurs.

• Major evaluations will be announced at least one week in advance.

• Accommodations will be made for school activities, statutory holidays, religious days, cultural days, sports events and other occurrences that may impact on any scheduled evaluation. It is the student’s responsibility to notify teachers of such absences in advance and to make up missed work.

• Absence on the day of an evaluation must be documented. If a student must miss an evaluation, s/he is expected to:

a) see the teacher before the absence to arrange for an alternative date to make up the evaluation; or

b) in case of illness or unexpected absence, present a note to the teacher, signed by a parent or guardian, immediately upon their return to explain the absence. An alternate evaluation will then be scheduled at a mutually convenient time.

• The East York Late Policy applies to all assignments and evaluations. See your Agenda book.

• Cheating will not be tolerated in any form and will be dealt with appropriately.

**Final Mark Calculation**

Calculation of the Term Mark will be based upon the ***Categories*** of the ***Achievement Chart***. This chart is meant to assist teachers in planning instruction and learning activities for the achievement of the curriculum expectations. It is also used in designing assessment and evaluation tools and in providing feedback to students. Each mathematical topic will contain each category in the chart due to the integrated nature of the discipline in mathematics. Final marks will be calculated as follows:

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| **Term Work:** |  | **70%** | ***Levels of Achievement:*** |
| Knowledge and Understanding: | 35% |  | Level 1: 50 - 59% |
| Application: | 14% |  | Level 2: 60 – 69% |
| Thinking and Inquiry: | 14% |  | Level 3: 70 – 79% |
| Communication:  **Final Summative Evaluations:** | 7% | **10% culminating 20 % final exam** | Level 4: 80 - 100% |

**Communication**

***Access to extra help and mark records***. Students are encouraged to consult their teachers on a regular basis for extra help and guidance as it relates to improving their academic performance. Students are also expected to discuss strategies for improving their grades with their teachers. Students are expected to view their report cards as an indication of their current achievement and discuss with teachers for clarification.

***Communication with Parents/Guardians***. Comments pertaining to academic achievement and learning skills are placed on the report cards are primarily to provide feedback for parents/guardians as well as students. Parent/guardian nights can be used for one to one discussion. At times it may be necessary to contact parents/guardians by telephone to discuss a student’s performance. Parents/guardians are also encouraged to contact teachers as and when the need arises.

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**MFM2P Daily Course Outline 2012-2013**

**Textbooks:** Foundations of Mathematics 10, McGraw – Hill Ryerson (2007) Student Workbook for Foundations of Mathematics 10 (2008)

**Strand #1: Trigonometry (18 periods)**

Overall Expectations:

• To use prior knowledge of ratio and proportion to investigate similar triangles and solve problems related to similarity;

• To solve problems involving right triangles, using the primary trigonometric ratios and the Pythagorean Theorem.

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| **Per #** | **TOPIC** | **Section** | **ASSIGNMENT** | **Comment** |
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| **UNIT #1: SIMILAR TRIANGLES (6 periods) \*\* See TIPS4RM – Unit #1 \*\*** | | | | |
| 1 & 2 | Similar Triangles | 1.3 | Investigation: p. 19-21  Txt: p. 25, #1-16  Wkbk: p. 8-10 | New topic  Computer lab needed for GSP. |
| 3 & 4 | Solve Problems Using Similar Triangles | 1.4 | Txt: p. 33, #1-15  Wkbk: p. 11-13 |  |
| 5 | Review |  | Txt: p. 39-41  Wkbk: p. 15 |  |
| 6 | Test and/or Performance Task |  |  |  |
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| **UNIT #2: RIGHT ANGLE TRIGONOMETRY (12 periods)** | | | | |
| 1 | Get Ready |  | Txt: p. 44-45  Wkbk: p. 16 |  |
| 2 | Pythagorean Theorem | 2.1 | Txt: p. 49, #1-15  Wkbk: p. 18-19 | Review of 1P |
| 3 & 4 | Explore Ratio & Proportion in Right  Triangles | 2.2 | Investigation: p. 54-57  Txt: p. 59, #1-11  Wkbk: p. 21-22 | New topic  Computer Lab needed for GSP Investigations |
| 5 & 6 | Sine & Cosine Ratios | 2.3 | Investigation: p. 63-67  Txt: p. 71, #1-18  Wkbk: p. 24-25 | New topic  Computer Lab needed for GSP Investigations |
| 7 & 8 | Tangent Ratio | 2.4 | Investigation: p. 74-77  Txt: p. 79, #1-14  Wkbk: p. 27-28 | New topic  Computer Lab needed for GSP Investigations |
| 9 & 10 | Solve Problems Using Right Triangles | 2.5 | Txt: p. 86, #1-11  Wkbk: p. 29-31 |  |
| 11 | Review |  | Txt: p. 90-91  Wkbk: p. 32-33 |  |
| 12 | Test and/or Performance Task |  |  |  |

**Strand #2: Modelling Linear Relations (32 periods)**

Overall Expectations:

• To manipulate and solve algebraic equations, as needed, to solve problems;

• To graph a line and write the equation of a line from given information;

• To solve systems of two linear equations, and solve related problems that arise from realistic situations.

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| **Per #** | **TOPIC** | **Section** | **ASSIGNMENT** | **Comment** |
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| **UNIT #3: LINEAR RELATIONS (14 periods)** | | | | |
| 1 | Get Ready |  | Txt: p. 98-99  Wkbk: p. 34 |  |
| 2 & 3 | Slope as a Rate of Change | 3.1 | Investigation: p. 100-101  Txt: p. 106, #1-15  Wkbk: p. 35-37 | Review for 1P students.  [1P vocabulary was “initial value” and “rate of change”] |
| 4 | Investigate y=mx+b using Technology | 3.2 | Investigation: p. 111-112  Txt: p. 115, #1-10  Wkbk: p. 38-40 | Graphing calculators needed. NEW for 1P students. Topic done with applications ONLY. |
| 5 & 6 | Properties of Slopes of Lines | 3.3 | Investigation: p. 118-122  Txt: p. 124, #1-15  Wkbk: p. 41-43 | Graphing calculators needed. NEW for 1P students. |
| 7 | Review |  | Txt: p. 146, #2-7  Wkbk: p. 137-138 |  |
| 8a | Test |  |  |  |
| 98b, 9 | Determine the Equation of a Line | 3.4 | Investigation: p. 128-129 | NEW for 1P students. |

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| & 10 |  |  | Txt: p. 133, #1-11  Wkbk: p. 44-46 | Graphing calculators needed. |
| 11 & 12 | Graph Linear Relations by Hand | 3.5 | Txt: p. 143, #1-10  Wkbk: p. 47-49 |  |
| 13 | Review |  | Txt: p. 147, #8-13 & p. 148-149  Wkbk: p. 50-51 |  |
| 14 | Test and/or Performance Task |  | Line Design Project |  |
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| **UNIT #4: LINEAR EQUATIONS (9 periods)** | | | | |
| 1 | Get Ready |  | Txt: p. 152-153  Wkbk: p. 52 |  |
| 2 | Solve One- and Two-Step Linear Equations | 4.1 | Txt: p. 159, #1-19  Wkbk: p. 53-55 | Review for 1P. Only fractional equations are new. |
| 3 & 4 | Solve Multi-Step Linear Equations | 4.2 | Txt: p. 169, #1-14  Wkbk: p. 56-58 |  |
| 5 & 6 | Model with Formulas | 4.3 | Txt: p. 180, #1-15  Wkbk: p. 59-61 |  |
| 7 | Convert Linear Equations from Standard  Form | 4.4 | Txt: p. 187, #1-11  Wkbk: p. 63-64 | New topic for 1P. |
| 8 | Review |  | Txt: p. 190-193  Wkbk: p. 65-66 |  |
| 9 | Test and/or Performance Task |  |  |  |
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| **UNIT #5: LINEAR SYSTEMS (9 periods)** | | | | |
| 1 | Solving Linear Systems by Graphing | 5.1 | Txt: p. 201, #1-13  Wkbk: p. 68-70 | Review for 1P  Graphing calculators needed |
| 2 & 3 | Solve Linear Systems by Substitution | 5.2 | Txt: p. 209, #1-14  Wkbk: p. 72-73 | New topic for 1P and 1D. |
| 4 & 5 | Solve Linear Systems by Elimination | 5.3 | Txt: p. 216, #1-9  Wkbk: p. 75-76 | New topic for 1P and 1D. |
| 6 & 7 | Solving Problems Involving Linear Systems | 5.4 | Txt: p. 223, #1-10  Wkbk: p. 78-79 |  |
| 8 | Review |  | Txt: p. 226-229  Wkbk: p. 80-81 |  |
| 9 | Test and/or Performance Task |  |  |  |
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| **1 & 2** | **Cumulative Review** |  | **Txt: pp. 232-233** |  |
| **3** | **CUMULATIVE TEST #1 (Units #1-5)** |  |  |  |

**Strand #3: Measurement (13 periods)**

Overall Expectations:

• To solve problems involving surface areas and volumes of three-dimensional figures, and use the imperial and metric systems of measurement.

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| **Per #** | **TOPIC** | **Section** | **ASSIGNMENT** | **Comment** |
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| **UNIT #3: MEASUREMENT (13 periods) \*\* Use EQAO academic formula sheet \*\*** | | | | |
| 1 | Get Ready |  | Txt: p. 4, #1-4 |  |
| 2 & 3 | Imperial Measure | 1.1 | Txt: p. 9, #1-9  Wkbk: p. 3-4 | New topic |
| 4 & 5 | Conversions between Metric & Imperial  Systems | 1.2 | Txt: p. 16, #1-8  Wkbk: p. 5-7 |  |
| 6 | QUIZ  Volumes of Prisms & Pyramids | 9.1 | Txt: p. 367, #1-11  Wkbk: p. 131-132 | Volume – review for 1P Models available for this unit. |
| 7 | Surface Area of Prisms & Pyramids | 9.2 | Txt: p. 376, #1-15  Wkbk: p. 134-135 | Surface area – NEW for 1P |
| 8 | Surface Area & Volume of Cylinders | 9.3 | Txt: p. 386, #1-15  Wkbk: p. 137-138 |  |
| 9 | Volume of Cones & Spheres | 9.4 | Txt; p. 394, #1-12  Wkbk: p. 140-141 |  |
| 10 & 11 | Solving Problems Involving Surface Area & Volume | 9.5 | Txt: p. 402, #1-10  Wkbk: p. 143-144 |  |
| 12 | Review |  | Txt: p. 406-409  Wkbk: p. 145-146 |  |
| 13 | Test and/or Performance Task |  |  |  |

**Strand #4: Quadratic Relations in the Form y=ax2+bx+c (32 periods)**

Overall Expectations:

• To manipulate algebraic expressions, as needed, to understand quadratic relations;

• To understand characteristics of quadratic relations;

• To solve problems by interpreting graphs of quadratic relations.

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| **Per #** | **TOPIC** | **Section** | **ASSIGNMENT** | **Comment** |
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| **UNIT #7: QUADRATIC RELATIONS (10 periods) \*\* See TIPS4RM – Unit #4 \*\*** | | | | |
| 1 & 2 | Explore Non-Linear Relations | 6.1 | Investigation: p. 238  Txt: p. 241, #1-9  Wkbk: p. 83-85 | New topic.  Graphing calculators needed daily for this unit. |
| 3 & 4 | Model Quadratic Relations | 6.2 | Investigation: p. 245-248  Txt: p. 249, #1-8  Wkbk: p. 87-88 |  |
| 5 & 6 | Key Features of Quadratic Relations | 6.3 | Investigation: p. 254-256  Txt: p. 260, #1-7  Wkbk: p. 89-91 |  |
| 7 & 8 | Rates of Change in Quadratic Relations | 6.4 | Investigation: p. 264-268  Txt: p. 269, #1-8  Wkbk: p. 92-94 |  |
| 9 | Review |  | Txt: p. 272-275  Wkbk: p. 95-96 |  |
| 10 | Test and/or Performance Task |  |  |  |
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| **UNIT #8: QUADRATIC EXPRESSIONS (10 periods) \*\* See TIPS4RM – Unit #7 \*\*** | | | | |
| 1 | Get Ready |  | Txt: p. 278-279  Wkbk: p. 97 |  |
| 2 & 3 | Multiply Two Binomials | 7.1 | Txt: p. 286, #1-10  Wkbk: p. 99-100 | New topics |
| 4 & 5 | Common Factoring | 7.2 | Txt: p. 294, #1-8  Wkbk: p101-103 |  |
| 6 | Difference of Squares | 7.3 | Txt: p. 302, #1-8  Wkbk: p. 104-106 |  |
| 7 & 8 | Factoring x2+bx+c | 7.4 | Txt: p. 309, #1-10  Wkbk: p. 107-109 |  |
| 9 | Review |  | Txt: p. 312-315  Wkbk: p. 110-111 |  |
| 10 | Test and/or Performance Task |  |  |  |
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| **UNIT #9: REPRESENT QUADRATIC RELATIONS (12 periods) \*\* See TIPS4RM – Unit #7 \*\*** | | | | |
| 1 | Get Ready |  | Txt: p. 318-319  Wkbk: p. 112 |  |
| 2 & 3 | Interpret Quadratic Relations | 8.1 | Investigation: p. 320-322  Txt: p. 323, #1-13  Wkbk: p. 112-115 | New topic  Graphing calculators needed daily for this unit. |
| 4 & 5 | Represent Quadratic Relations in Different  Ways | 8.2 | Investigation: p. 329-332  Txt: p. 333, #1-13  Wkbk: p. 116-118 |  |
| 6 & 7 | Quadratic Relations y=ax2+c | 8.3 | Investigation: p. 336-340  Txt: p. 341, #1-13  Wkbk: p. 119-121 |  |
| 8, 9 &  10 | Solve Problems Involving Quadratic  Relations | 8.4 | Investigation: p. 344-346  Txt: p. 347, #1-12  Wkbk: p. 122-124 |  |
| 11 | Review |  | Txt: p 352-355  Wkbk: p. 125-128 |  |
| 12 | Test and/or Performance Task |  |  |  |
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| **1, 2 & 3** | **January/june Summative Review (Units #1-9)** |  | **Txt: pp. 358-359 pp. 412-415** |  |
| **1, 2 & 3** | **JANUARY/JUNE SUMMATIVE EVALUATIONS & PERFORMANCE TASKS (30% of Final Mark)** | | | |