**EAST YORK COLLEGIATE INSTITUTE**

**MAP4C Course Outline 2016-2017**

This Course Outline is based upon the Ministry of Education and Training Ontario Curriculum for Grade 12 Foundations of College

Mathematics as per the revised document of 2007.

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

***Developing Teachers:*** S. Litman, I. Skoric

***Date of Revision:*** September 2016

***Course Title:* Foundations for College Mathematics**, Grade 12, College Preparation

***Grade:*** 12

***Course Code:*** MAP4C

***Credit Value:*** 1.0

***Pre-requisite:*** MBF3C or MCF3M

***Textbook:*** Foundations for College Mathematics 12, McGraw-Hill Ryerson (2009)

***Resources:*** Teacher’s Resource for Foundations for College Math 12, McGraw-Hill Ryerson (2009) Foundations for College Mathematics 12, Pearson (2008)

OMCA Materials (2007)

Graphing Calculators, Internet, Spreadsheets, Geometer’s Sketchpad & Fathom

**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 such areas as business, health sciences, and human services, and for certain skilled trades. 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**

Algebraic Models - Exponents: 12 periods Personal Finance: 24 periods Trigonometry: 10 periods Data Management: 22 periods Mathematical Models: 9 periods Measurement & Geometry: 10 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:*** Graphing Calculators, Internet, Spreadsheets, Geometer’s Sketchpad and Fathom 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: | 28% |  | Level 1: 50 - 59% |
| Application: | 21% |  | Level 2: 60 – 69% |
| Thinking and Inquiry: | 14% |  | Level 3: 70 – 79% |
| Communication: | 7% |  | Level 4: 80 - 100% |
| **Final Summative Evaluation:** |  | **30%** |  |

**Reporting**

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| **Report #1** | **Report #2** | **June Report** |
| 100% Term Work | 100% Term Work(Cumulative Sept – Feb) | 70% Term Work + 10% Summative Tasks + 20% June Examination(Cumulative Sept to June) |

**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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**MAP4C Daily Course Outline 2012-2013**

**Textbook:** Foundations for College Mathematics 12, McGraw-Hill Ryerson (2009)

**Strand #1: Algebraic Models – Exponents (12 periods)**

Overall Expectations:

• To evaluate powers with rational exponents, simplify algebraic expressions involving exponents, and solve problems involving exponential equations graphically and using common bases.

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| **Per #** | **TOPIC** | **Section** | **ASSIGNMENT** | **Comment** |
|  |  |  |  |  |
| **UNIT #1: ALGEBRAIC MODELS – EXPONENTS (12 periods)** |
| 1 | Exponent Laws – Positive Exponents | 6.1 | p. 340, #5-8 |  |
| 2 | Zero & Negative Exponents | 6.1 | p. 340, #9-13 |  |
| 3 & 4 | Exponent Laws – Negative Exponents | 6.1 | Investigate pp. 342-344 p. 349, #1-13 |  |
| 5 & 6 | Rational Exponents | 6.2 | Investigate pp. 352-353 p. 359, #1-15 |  |
| 7 | Represent Exponential Expressions | 6.3 | Investigate pp. 362-363 p. 365, #1-11 |  |
| 8 | Tools & Strategies to Solve Exp. Equations | 6.4 | P 373, #1-14 | Using TI-83 |
| 9 & 10 | Construct & Apply Exponential Models | 6.5 | p. 385, #1-9 | Using TI-83 |
| 11 | Review |  | pp. 390-391 |  |
| 12 | Test and/or Performance Task |  |  |  |

**Strand #2: Personal Finance (24 periods)**

Overall Expectations:

• To demonstrate an understanding of annuities, including mortgages, and solve related problems using technology;

• To gather, interpret, and compare information about owning or renting accommodation, and solve problems involving associated costs;

• To design, justify, and adjust budgets for individuals and families described in case studies, and describe applications of the mathematics of personal finance.

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| **UNIT #2: ANNUITIES & MORTGAGES (11 periods)** |
| 1 | Review of Compound Interest |  | pp. 400-401 |  |
| 2 & 3 | Annuities | 7.1 | Investigate pp. 402-403 p. 409, #1-17 | TVM Solver |
| 4 & 5 | Conditions of an Annuity | 7.2 | Investigate pp. 414-415 p. 417, #1-11 | TVM Solver |
| 6 & 7 | Mortgages & Amortization | 7.3 | Investigate pp. 420-421 p. 425, #1-9 | TVM Solver |
| 8 & 9 | Conditions of a Mortgage | 7.4 | p. 434, #1-12 |  |
| 10 | Review |  | pp. 438-439 |  |
| 11 | Test and/or Performance Task |  |  |  |
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| **UNIT #3: BUDGETING (13 periods)** |
| 1 | Task: Registered Education Savings Plan |  | pp. 442-443 | Internet access |
| 2 & 3 | Savings Plans | 8.1 | pp. 451, #1-13 | Internet access |
| 4 & 5 | Cost of Renting a Home | 8.2 | Investigate pp. 454-455 p. 458, #1-11 | Internet accessClassified ads |
| 6 & 7 | Cost of Owning a Home | 8.3 | Investigate pp. 462-463 p. 465, #1-11 | Internet accessReal estate ads |
| 8 & 9 | Living Expenses | 8.4 | p. 472, #1-11 |  |
| 10 & 11 | Case Studies | 8.5 | pp. 478-481 |  |
| 12 | Review |  | pp. 482-483 |  |
| 13 | Test and/or Performance Task |  |  |  |

**Strand #3: Trigonometry (10 periods)**

Overall Expectations:

• To 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 describing applications of trigonometry in various occupations.

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| **Per #** | **TOPIC** | **Section** | **ASSIGNMENT** | **Comment** |
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| **UNIT #4: TRIGONOMETRY (10 periods)** |
| 1 & 2 | Trigonometric Ratios – Acute Angles | 2.1 | pp. 80, #1-14 | . |
| 3 & 4 | Trigonometric Ratios – Obtuse Angles | 2.2 | Investigate pp. 85-88 pp. 93, #1-12 | GSP |
| 5 | Sine Law | 2.3 | p. 101, #1-14 |  |
| 6 | Cosine Law | 2.4 | p. 110, #1-12 |  |
| 7 & 8 | Applications of Trigonometry | 2.5 | p. 126, #1-11 |  |
| 9 | Review |  | pp. 130-131 |  |
| 10 | Test and/or Performance Task |  |  |  |
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| **1 & 2** | **Cumulative Review** |  |  |  |
| **3** | **CUMULATIVE TEST #1 (Units #1-4)** |  |  |  |

**Strand #4: Data Management (22 periods)**

Overall Expectations:

• To collect, analyze, and summarize two-variable data using a variety of tools and strategies, and interpret and draw conclusions from the data;

• To demonstrate an understanding of the applications of data management used by the media and the advertising industry and used in

various occupations.

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| **UNIT #5: TWO-VARIABLE STATISTICS (11 periods)** |
| 1 & 2 | Two-Variable Data Sets | 3.1 | Investigate pp. 142-143 p. 146, #1-10 |  |
| 3 | Effective Surveys | 3.2 | Investigate pp. 152-153 p. 156, #1-13 |  |
| 4 & 5 | Collect & Organize Data | 3.3 | p. 165, #1-13 | E-STAT |
| 6 & 7 | Line of Best Fit | 3.4 | p. 175, #1-12 | TI-83 |
| 8 & 9 | Analysis & Conclusions | 3.5 | p. 186, #1-9 |  |
| 10 | Review |  | pp. 190-191 |  |
| 11 | Test and/or Performance Task |  |  |  |
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| **UNIT #6: APPLY DATA MANAGEMENT (11 periods)** |
| 1 | Measures of Central Tendency |  | pp. 198-199 |  |
| 2 & 3 | Statistical Measures | 4.1 | p. 205, #1-11 |  |
| 4 & 5 | Statistical Indices | 4.2 | Investigate pp. 214-217 p. 218, #1-12 |  |
| 6 | Interpret Statistics in the Media | 4.3 | Investigate pp. 226-227 p. 231, #1-12 | Examples of statistics in media |
| 7 | Statistical Bias | 4.4 | p. 239, #1-13 |  |
| 8 & 9 | Critical Analysis | 4.5 | Investigate pp. 244-245 p. 251, #1-14 |  |
| 10 | Review |  | pp. 256-257 |  |
| 11 | Test and/or Performance Task |  |  |  |

**Strand #5: Mathematical Models (9 periods)**

Overall Expectations:

• To describe trends based on interpretation of graphs, compare graphs using initial conditions and rates of change, and solve problems by modeling relationships graphically and algebraically;

• To make connections between formulae and linear, quadratic, and exponential relations, solve problems using formulae arising from real-

world applications, and describe applications of mathematical modeling in various occupations.

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| **UNIT #7: GRAPHICAL MODELS (9 periods)** |
| 1 | Linear Models | 5.1 | p. 275, #1-12 | TI-83 |
| 2 | Quadratic Models | 5.2 | p. 289, #1-8 | TI-83 |
| 3 | Exponential Models | 5.3 | p. 301, #1-10 | TI-83 |
| 4 & 5 | Analyse Graphical Models | 5.4 | p. 316, #1-12 | TI-83 |
| 6 & 7 | Select a Graphical Model | 5.5 | p. 325, #1-12 | TI-83 |
| 8 | Review |  | pp. 332-333 |  |
| 9 | Test and/or Performance Task |  |  |  |

**Strand #6: Measurement & Geometry (10 periods)**

Overall Expectations:

• To solve problems involving measurement and geometry and arising from real-world applications;

• To explain the significance of optimal dimensions in real-world applications, and determine optimal dimensions of two- and three- dimensional figures.

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| **UNIT #8: MEASUREMENT & GEOMETRY (7 periods)** |
| 1 | Area | 1.1 | p. 11, #1-14 |  |
| 2 | Volume | 1.2 | p. 23, #1-13 |  |
| 3 | Surface Area | 1.3 | p. 32, #1-16 |  |
| 4 & 5 | Optimize Perimeter and Area | 1.4 | Investigate pp. 36-38 p. 42, #1-16 |  |
| 6 | Investigate Optimum Volume & SurfaceArea | 1.5 | Investigate pp. 46-48 | GSP |
| 7 & 8 | Analyse Optimum Volume & Surface Area | 1.6 | p. 60, #1-17 |  |
| 9 | Review |  | pp. 64-65 |  |
| 10 | Test and/or Performance Task |  |  |  |
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|  | **January/June Summative Review (Units #1-8)** | Ch 1 & 2 – pp. 134-135Ch 3 & 4 -- pp. 260-261Ch 5 & 6 – pp. 394-395Ch 1-8 -- pp. 490-497 |
|  | **January/June SUMMATIVE EVALUATIONS & PERFORMANCE TASKS (30% of Final Mark)** |