INSTITUTE OF CANADIAN EDUCATION

Course Title: Course Title: Foundation of College Mathematics Grade 12

Course Name: Foundation of College Mathematics

Course Code: MAP4C

Grade: 12

Course Type: College Preparation

Credit Value: 1.0

Prerequisite: MBF3C Foundations for College Mathematics, Grade 11, College Preparation, or MCF3M Functions and Applications, Grade 11, University/College Preparation

Curriculum Policy Document: Foundation of College Mathematics, The Ontario Curriculum, Grades 11 & 12 (2015, Revised);*Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools* (2010)

Course Developer: Institute of Canadian Education.

Department: Mathematics

Head of Department: Meena Yohan

Development Date: 2025

Most Recent Revision Date: August 2026

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."

Unit	Title	Description	Time
1	**Mathematical Models**	Students use mathematical models to represent real-world situations, analyze relationships, interpret data, and solve practical problems.	**27 Hours**
2	**Personal Finance**	Students develop financial literacy through budgeting, saving, credit, loans, investments, taxes, and financial decision-making.	**25 Hours**
	MID-TERM EXAM	Cumulative assessment of Units 1–2, focusing on knowledge, problem-solving, and application.	**2 Hours**
3	**Geometry and Trigonometry**	Students explore geometric relationships, measurement, and trigonometry to solve problems involving shapes, angles, and triangles.	**30 Hours**
4	**Data Management**	Students collect, organize, analyze, and interpret data using statistics, probability, graphs, and mathematical reasoning.	**23 Hours**
5	**Final Assessment**	Comprehensive assessment of course learning, including knowledge, problem-solving, and application.	**3 Hours**
TOTAL			**110 Hours**

Overall Curriculum Expectations:

1. Mathematical Models	
A1	Introduction to Mathematical Modelling
A2	Rate of Change
A3	Comparing Graphical Models
A4	Classifying Mathematical Models
A5	Simplifying Expressions Using Exponent Laws
A6	Working with Rational Exponents
A7	Solving Exponential Equations
A8	Problem Solving with Algebraic Models
A9	Unit Summative Assessment
2. Forces and Newton's Laws of Motion: Mechanical Systems	
B1	Introduction to Annuities
B2	Investigations with Annuities
B3	Mortgages
B4	Owning and Renting Accommodations
B5	Determining Living Costs
B6	Designing Budgets
B7	Unit Summative Assessment / Evaluation
3. Geometry and Trigonometry	
C1	Working With Two-Dimensional Shapes
C2	Volumes and Surface Areas of Three-Dimensional Figures
C3	Investigating and Optimizing Two-Dimensional Shapes
C4	Investigating and Optimizing Three-Dimensional Shapes

C5	Assessment of Geometry Concepts
C6	Trigonometry of Right Triangles
C7	Trigonometric Ratios of Obtuse Angles
C8	The Sine Law
C9	The Cosine Law
C10	Assessment of Trigonometric Concepts
4. Data Management	
D1	Distinguishing between One- and Two-variable Data Analysis
D2	Characteristics of an Effective Survey
D3	Collecting and Representing Two-Variable Data
D4	The Line of Best Fit
D5	Making and Assessing Conclusions from Two-Variable Data Analysis
D6	Common Statistical Terms and Expressions
D7	The Interpretation, Use and Application of Indices
D8	Statistics in the Media
D9	Assessment of Data Management Concepts
FINAL EXAM	

TEACHING AND LEARNING STRATEGIES

End-of-Unit Conversations: Students explain their ideas, problem-solving strategies, and thinking processes while receiving timely teacher feedback.

Reflection: Students reflect on concepts, connect theory to practice, and relate learning to their own experiences and perspectives.

Discussions with the Instructor: Asynchronous communication through messages, discussion tools, and scheduled video conferencing allows students to ask questions and discuss concepts and skills.

Discussion Forums: Students share ideas and perspectives with peers and participate in peer feedback to deepen understanding.

Practical Extension and Application of Knowledge: Students apply mathematical concepts and skills to real-world situations and everyday problems.

Individual Activities/Assignments: Students complete activities independently and at their own pace to reinforce and demonstrate learning, with appropriate accommodations and ongoing teacher feedback.

Research: Students gather information, evaluate sources, analyze findings, and communicate conclusions using critical and creative thinking.

Writing: Written activities help students organize, explain, and communicate their mathematical thinking.

Virtual Simulations: Interactive online tools allow students to explore variables, relationships, and mathematical concepts.

Diagrams: Visual representations help students organize and understand mathematical ideas and relationships.

Visuals: Visual resources support understanding, memory, and interpretation of mathematical concepts.

Graphs and Charts: Students use graphs and charts to represent data and identify relationships and trends.

Tables: Tables organize information and help students identify relationships, patterns, and trends in data.

Practice Problems: Students apply mathematical concepts and skills to solve problems in practical and real-world contexts.

Assessment Strategies

Students will be provided with numerous and varied opportunities to demonstrate the full extent of their achievement of the curriculum expectations, across all four categories of the Achievement Chart. Progress will be monitored on an on-going basis using a variety of assessment tools, including written work, formal testing, quizzes, teacher-student communication, discussion boards and chat rooms.

ASSESSMENT ACTIVITIES

- Discussion Forums
- Oral Presentations and Active Listening
- Quizzes and Tests
- Reflections
- Graphing and Data Analysis
- Problem-Solving Calculations
- End-of-Unit Conversations (Google Meet)
- Diagnostic Tests and Writing Tasks
- Final Examination

Final Grade

The final grade will be determined as follows (in accordance with Ministry of Education standards):

Term Work Based on evaluations conducted throughout the course.	65%
Summative Evaluation A final evaluation in the form of assignments and an exam.	25%
Attendance and Participation	10%

Final Examination Breakdown

- 25% Written exam

ATTENDANCE POLICY

Regular attendance and active engagement are important for student success. Attendance and participation are monitored through the school's Learning Management System (LMS).

All online credit courses at ICE are designed to meet or exceed the **minimum 110 hours of instructional time** required for a credit course.

Online instructional time and engagement are monitored through:

- **LMS Engagement:** Students are expected to log in regularly and actively participate in online learning activities. LMS activity records are used to monitor engagement.
- **Biweekly Check-Ins:** Students complete a brief check-in every two weeks to review their progress and engagement. Additional support may be provided when concerns are identified.
- **Post-Unit Quizzes:** Short formative quizzes are completed at the end of each unit to monitor student progress and pacing.
- **Discussion Forums:** Students participate in required unit discussions and peer activities. Participation is monitored based on completion and engagement.
- **Instructional Records:** The school maintains records of instructional time, attendance, and student engagement.

Students are responsible for maintaining regular participation and completing required learning activities within the course schedule.

EVALUATION MODEL – 10% TOTAL ATTENDANCE AND ENGAGEMENT WEIGHT

Component	Weight	Quantifiable Metric	Criteria
Biweekly Check-In	3%	Completed every two weeks	Students complete the required check-in within the scheduled time frame.
Post-Unit Formative Quiz	4%	Completed after each unit	Students complete the formative quiz by the assigned deadline.
Discussion Forum Participation	3%	Required posts and responses	Students submits the required original response and completes assigned peer responses.

CONSIDERATIONS FOR PROGRAM PLANNING

PLANNING PROGRAMS FOR STUDENTS WITH SPECIAL EDUCATION NEEDS

Teachers support the success of all students through Universal Design for Learning (UDL), differentiated instruction, and evidence-based practices, consistent with *Learning for All* (2013). Where applicable, IEP instructional, environmental, and assessment accommodations are implemented. Online learning provides flexibility through extended time, breaks, assistive technology, and opportunities to review materials.

PROGRAM CONSIDERATIONS FOR ENGLISH LANGUAGE LEARNERS

Teachers consider the strengths and needs of English language learners and provide appropriate supports consistent with Ontario ESL/ELD policies. Supports may include simplified instructional language without changing curriculum expectations, visual and multimedia resources, opportunities for review, extended time, bilingual dictionaries, and feedback that supports academic English.

ENVIRONMENTAL EDUCATION

Environmental education is integrated across the curriculum in accordance with Ontario policies. Students develop knowledge, skills, and attitudes that support responsible environmental practices and apply course concepts to relevant environmental issues.

EQUITY AND INCLUSIVE EDUCATION

The course promotes a welcoming, respectful, and inclusive learning environment for all students. Learning materials and assessment practices reflect diverse cultures, perspectives, identities, and experiences and are designed to minimize bias.

FINANCIAL LITERACY EDUCATION

Students develop financial knowledge and skills needed to make informed decisions as consumers and citizens. Where appropriate, course activities connect learning to budgeting, personal finance, and real-life financial decisions.

FIRST NATIONS, MÉTIS, AND INUIT EDUCATION

Program planning aligns with the Ontario First Nation, Métis, and Inuit Education Policy Framework (2007). Where appropriate, teachers incorporate accurate and respectful Indigenous perspectives, histories, cultures, contributions, and contemporary issues using appropriate Ministry resources.

THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

ICT is integrated into instruction, learning, assessment, and communication. Students use digital tools, multimedia, online resources, and productivity software while developing digital citizenship, responsible technology use, source evaluation, privacy awareness, and academic integrity.

CAREER EDUCATION

Students are encouraged to connect course learning with education, career, and life-planning goals. Course activities provide opportunities to develop transferable skills, explore career pathways, and apply learning to real-world situations.

COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING

Where appropriate, students may connect course learning to experiential opportunities such as job shadowing, work experience, and cooperative education. These experiences help students explore careers and develop workplace skills.

HEALTH AND SAFETY

Health and safety are promoted in both learning activities and the online environment. Students are encouraged to use proper ergonomics, maintain healthy screen-time habits, take regular breaks, and follow school expectations for safety, well-being, privacy, and respectful conduct.

ACCOMMODATIONS

Accommodations are determined through consultation with parents/guardians, teachers, administration, and relevant educational assessments. They may include:

- Instructional accommodations: changes to teaching strategies, organization, presentation, technology, or multimedia.
- Assessment accommodations: additional time, alternative response formats, or oral responses where appropriate.
- Step-by-step instructions and organizational supports.
- Writing organizers and planning tools.
- Scribe or note-taking support when appropriate.
- Flexible reading and writing options.
- Advance access to reading materials when needed.
- Opportunities for enrichment and extension.

COURSE MATERIALS

Required Software, Equipment, Textbooks
Special software or technology for this course will include:

- Geometer's Sketchpad (available for home use through your school)
- A word processor (WordPerfect or Word are examples. OpenOffice is free for download).
- A spreadsheet program (Quattro Pro or Excel are examples. OpenOffice is free for download).
- Adobe Acrobat Reader (free for download)
- A scientific calculator.
- Graphing Technology will be required in the course. You may consider purchasing the TI-83 Graphing Calculator. Geometer's Sketchpad may be used to graph functions. Free software packages for graphing are available on the internet (for example WinPlot).
- Access to a fax machine will make it possible for you to submit hand-written assignments. Alternately, you may be able to scan hand-written assignments and submit the scan files. Your instructor will give you direction in this area.

At minimum, students should have access to:

- Computer
- Internet connection (high speed is preferable since some demonstrations and lessons may take a long time to download on a dial-up connection)
- Flash and Shockwave players (to view some linked demonstrations and lessons) -- generally a free download, if not already included with Internet Explorer
- media player (to view streamed video) generally a free download, if not already included with Internet Explorer
- word processing software
- graphics software, where the product can be saved in a standard format like .jpg or .gif
- other media hardware like scanner, camera / digital camera, microphone, video / digital video camera (not necessary to have all, but should have some)

Tips for Success – MAP4C

Welcome to **MAP4C: Grade 12 Mathematics for College Technology – College Preparation**

- Check announcements and course messages regularly.
- Review the course calendar and complete assignments, quizzes, and projects on time.
- Carefully read instructions, examples, and rubrics before completing each task.
- Practise mathematical skills regularly and show all steps in your calculations.
- Participate actively in online discussions, problem-solving activities, and learning tasks.

Ask for Help

- For technical issues, contact the Help Desk.
- For course-related questions, email your teacher. Expect a response within 24 hours; mark the message **"URGENT"** when necessary.

Key Elements to Success

- **Time Commitment:** Plan for approximately 1–2 hours of focused study daily, including practice and review.
- **Communication:** Maintain regular communication with your teacher to ask questions and receive feedback.
- **Practice:** Complete practice problems and review worked examples regularly.
- **Organization:** Keep track of deadlines, notes, formulas, and completed assignments.
- **Engagement:** Stay focused, persistent, and willing to apply mathematics to real-world situations.

Remember: MAP4C is designed to help you develop practical mathematical skills for everyday life, financial decision-making, data analysis, geometry, measurement, and problem-solving. Work carefully, show your mathematical reasoning, and use feedback to improve your learning.