



Course Outline

Course Name: Technical Mathematics 2 (TMTH 204)

Academic Period: 2022 - 2023

Faculty:

Faculty Availability:

Associate Dean:

Mona Nouroozifar

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Schedule Type Code:

Land Acknowledgement

Humber College is located within the traditional and treaty lands of the Mississaugas of the Credit. Known as Adoobiigok [A-doe-bee-goke], the "Place of the Alders" in Michi Saagiig [Mi-Chee Saw-Geeg] language, the region is uniquely situated along Humber River Watershed, which historically provided an integral connection for Anishinaabe [Ah-nish-nah-bay], Haudenosaunee [Hoeden-no-shownee], and Wendat [Wine-Dot] peoples between the Ontario Lakeshore and the Lake Simcoe/Georgian Bay regions. Now home to people of numerous nations, Adoobiigok continues to provide a vital source of interconnection for all.

Equity, Diversity and Inclusion Statement

Humber College and the University of Guelph-Humber (Humber) are leaders in providing a learning, working and living environment that recognizes and values equity, diversity and inclusion in all its programs and services. Humber commits to reflect the diversity of the communities the College serves. Students, faculty, support and administrative staff feel a sense of belonging and have opportunities to be their authentic selves.

Faculty or Department	Faculty of Liberal Arts & Sciences
Course Name:	Technical Mathematics 2 (TMTH 204)
Pre-Requisites	none
Co-Requisites	none
Equates	none
Restrictions	none
Credit Value	3
Total Course Hours	42

Developed By:

Prepared By:

Approved by:

Mona Nouroozifar

Humber Learning Outcomes (HLOs) in this course.

The HLOs are a cross-institutional learning outcomes strategy aimed at equipping Humber graduates with the employability skills, mindsets, and values they need to succeed in the future of work. To explore all the HLOs, please consult the [Humber Learning Outcomes framework](#).

Course Description

N/A

Course Rationale

This is a second course in mathematics designed to provide students with the mathematical skills that they will need in their career, including:

- Identifying the premises and assumptions underlying technical problems.
- Selecting relevant and useful information within the given data to achieve a solution to the problem.
- Organizing and analyzing data using tables, diagrams, and graphs.
- Formulating graphical and symbolic models to test hypotheses in applications.
- Applying critical and mathematical thinking to solve problems in their fields of expertise.

By working through numerous examples and exercises that are drawn from real-world technical application, students will also develop the confidence and versatility in using mathematical tools while appreciating the relevance of these tools in allied technical fields of study.

Course Learning Method(s)

- Problem Based Learning (PBL)
- Group or Team Work
- Lecture
- Inquiry Based Learning
- Online

Learning Outcomes

- Solve mathematical problems related to complex numbers, triangles, vectors, and sinusoids.
- Solve mathematical problems related to trigonometric identities and equations, and systems of linear equations.
- Solve mathematical problems related to systems of 3 linear equations and determinants.
- Solve mathematical problems involving matrices and quadratic equations.
- Solve mathematical problems involving radical equations, graphing, and systems of quadratic equations.
- Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts.

Assessment Weighting

Assessment	Weight
Instructor-Created Assessments	10%
Quiz	20%
Midterm Exam	35%
Final Exam	35%
Total	100%

Modules of Study

Module	Course Learning Outcomes	Resources	Assessments
Complex Numbers	<ul style="list-style-type: none"> Solve mathematical problems related to complex numbers, triangles, vectors, and sinusoids. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 21-R	<ul style="list-style-type: none"> Quiz 1 Midterm Final Exam Demonstration
Solve Oblique Triangles and Vectors	<ul style="list-style-type: none"> Solve mathematical problems related to complex numbers, triangles, vectors, and sinusoids. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 15.2, 15.3 & 15.5	<ul style="list-style-type: none"> Quiz 1 Midterm Final Exam Demonstration
Sinusoids and Complex Numbers Applications	<ul style="list-style-type: none"> Solve mathematical problems related to complex numbers, triangles, vectors, and sinusoids. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 17.5	<ul style="list-style-type: none"> Quiz 1 Midterm Final Exam Demonstration
Trigonometric Identities and Equations	<ul style="list-style-type: none"> Solve mathematical problems related to trigonometric identities and equations, and systems of linear equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 18.1, 18.2, 18.3 & 18.5	<ul style="list-style-type: none"> Quiz 2 Midterm Final Exam Demonstration
Systems of 2 Linear Equations	<ul style="list-style-type: none"> Solve mathematical problems related to trigonometric identities and equations, and systems of linear equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 10.1 & 10.2	<ul style="list-style-type: none"> Quiz 2 Midterm Final Exam Demonstration
Systems of 3 Linear Equations	<ul style="list-style-type: none"> Solve mathematical problems related to systems of 3 linear equations and determinants. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 10.3 & 10.4	<ul style="list-style-type: none"> Quiz 3 Final Exam Demonstration

Module	Course Learning Outcomes	Resources	Assessments
Determinants	<ul style="list-style-type: none"> Solve mathematical problems related to systems of 3 linear equations and determinants. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 11.1 & 11.2	<ul style="list-style-type: none"> Quiz 3 Final Exam Demonstration
Matrices	<ul style="list-style-type: none"> Solve mathematical problems involving matrices and quadratic equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 12.1, 12.2, 12.3 & 12.4	<ul style="list-style-type: none"> Quiz 4 Final Exam Demonstration
Quadratic Equations	<ul style="list-style-type: none"> Solve mathematical problems involving matrices and quadratic equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapters 14.1 & 14.3	<ul style="list-style-type: none"> Quiz 4 Final Exam Demonstration
Radical Equations	<ul style="list-style-type: none"> Solve mathematical problems involving radical equations, graphing, and systems of quadratic equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 13.4	<ul style="list-style-type: none"> Quiz 5 Final Exam Demonstration
Graph a straight line	<ul style="list-style-type: none"> Solve mathematical problems involving radical equations, graphing, and systems of quadratic equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 5.2 & 5.3	<ul style="list-style-type: none"> Quiz 5 Final Exam Demonstration
Systems of Quadratic Equations	<ul style="list-style-type: none"> Solve mathematical problems involving radical equations, graphing, and systems of quadratic equations. Demonstrate communication, critical thinking and problem solving skills by presenting, discussing, and explaining course concepts. 	Chapter 14.8	<ul style="list-style-type: none"> Quiz 5 Final Exam Demonstration

Required Resources

Textbook: Calter, Calter, Spencer & Wraight. (2016). Technical Mathematics with Calculus. (3rd Cdn ed.) Canada Ltd. John Wiley & Sons Inc.
 Hardcover Book: ISBN 9781118962145 or
 Binder Ready Version: ISBN 9781118962169 or E-Text Version: ISBN 9781119272724

Additional Tools and Equipment

- Scientific Calculator: CASIO-FX991 ES Plus 2

Essential Skills

Section	Skills	Measurement	Details
Communication	<ul style="list-style-type: none"> • Reading • Writing • Speaking • Listening 	Reinforce and measure	<ul style="list-style-type: none"> • In class demonstration, pre-recorded videos, handouts, slides, question sheets. • Quizzes Tests
Numeracy	<ul style="list-style-type: none"> • Understanding and applying mathematical concepts and reasoning • Analyzing and using numerical data • Conceptualizing 	Teach and measure	<ul style="list-style-type: none"> • In class demonstration, pre-recorded videos, handouts, slides, question sheets. • Quizzes and tests
Critical Thinking and Problem-Solving	<ul style="list-style-type: none"> • Analysing • Synthesizing • Evaluating • Decision-Making • Creative and Innovative Thinking 	Teach and measure	<ul style="list-style-type: none"> • In class demonstration, pre-recorded videos, handouts, slides, question sheets. • Quizzes and tests
Information Management	<ul style="list-style-type: none"> • Gathering and managing information • Selecting and using appropriate tools and technology for a task or project 	Teach and measure	<ul style="list-style-type: none"> • In class demonstration, pre-recorded videos, handouts, slides, question sheets. • Quizzes and tests
Interpersonal Skills	<ul style="list-style-type: none"> • Teamwork • Leadership 	Reinforce and measure	<ul style="list-style-type: none"> • In class exercises and interaction. • Participation in class.
Personal Skills	<ul style="list-style-type: none"> • Managing self • Managing change and being flexible and adaptable • Engaging in reflective practice • Demonstrating personal responsibility 	Reinforce and measure	<ul style="list-style-type: none"> • In class demonstration. • Quizzes and tests

Prior Learning Assessment & Recognition (PLAR)

Prior Learning Assessment and Recognition (PLAR) is the formal evaluation and credit-granting process whereby candidates may obtain credits for prior learning. Prior learning includes the knowledge competencies and skills acquired, in both formal and informal ways, outside of post-secondary education. Candidates may have their prior learning evaluated against the course learning outcomes as defined in the course outline.

To find out if this course is eligible for PLAR, and how this learning would be assessed, please contact the Program Coordinator for more details.

Academic Regulations

It is the student's responsibility to be aware of the College Academic Regulations. The Academic Regulations apply to all applicants to Humber and all current students enrolled in any program or course offered by Humber, in any location. Information about academic appeals is found in the [Academic Regulations](#).

Anti-Discrimination Statement

At Humber College, all forms of discrimination and harassment are prohibited. Students and employees have the right to study, live and work in an environment that is free from discrimination and harassment. If you need assistance on concerns related to discrimination and harassment, please contact the [Centre for Human Rights, Equity and Inclusion](#) or the [Office of Student Conduct](#).

Accessible Learning Services

Humber strives to create a welcoming environment for all students where equity, diversity and inclusion are paramount. Accessible Learning Services facilitates equal access for students with disabilities by coordinating academic accommodations and services. Staff in Accessible Learning Services are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. If you require academic accommodations, contact:

[Accessible Learning Services](#)

North Campus: (416) 675-6622 X5090

Lakeshore Campus: (416) 675-6622 X3331

Academic Integrity

Academic integrity is essentially honesty in all academic endeavors. Academic integrity requires that students avoid all forms of academic misconduct or dishonesty, including plagiarism, cheating on tests or exams or any misrepresentation of academic accomplishment.

Disclaimer

While every effort is made by the professor/faculty to cover all material listed in the outline, the order, content, and/or evaluation may change in the event of special circumstances (e.g. time constraints due to inclement weather, sickness, college closure, technology/equipment problems or changes, etc.). In any such case, students will be given appropriate notification in writing, with approval from the Dean (or designate) of the School.

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