Toronto Metropolitan University

The Chang School of Continuing Education

TED ROGERS SCHOOL Information Technology Management

(C)ITM 207 - Computer-Enabled Problem Solving

COURSE OUTLINE FOR 2025-2026

Prerequisite(s): (C)ITM 100 or (C)ITM 102

Faculty/Contract Lecturer Information

- **Faculty/Contract Lecturer Name:**
- **Office Location:**
- **Office Hours:**
- **Phone:** (416) 979 – 5000, ext.
- **Course Website:** my.torontomu.ca (for courses using D2L)
- **Email Address:** youremail@torontomu.ca

Email Policy

Students are expected to monitor and retrieve messages and information sent through D2L and TMU email on a frequent and consistent basis. In accordance with the Policy on TMU Student E-mail Accounts (Policy 157), Toronto Metropolitan University (TMU) requires that any electronic communication by students to TMU faculty or staff be sent from their official university email account. Communications sent from other accounts may be disregarded.

Course Description

The course covers the basic data representation and processing constructs necessary to problem solving using computers. This includes the development of algorithmic solutions to data processing problems through the use of workflow concepts such as sequence, selection, and iteration. In addition, the course addresses fundamental problem-solving strategies such as the decomposition of data processing problems into multiple tasks whose functions are coordinated within a specified workflow. Computer simulation and/or implementation tools will be used to provide hands-on application of studied concepts using business problem solving examples.

Course Details

Teaching Methods

If you are registered in an in-person or a virtual classroom, instruction will take place at scheduled hours, following the approach outlined in D2L Brightspace. If you are registered in a Chang School Distance Education course, please follow the schedule, course outline and learning modules as outlined in D2L Brightspace.

Note: All assessments in this course, regardless of its delivery format, will be held in-person on campus. This applies to in-person, virtual, and online courses, including sections/courses delivered through the Chang School.

The course will incorporate lecture and laboratory/tutorial sessions designated at the instructor's discretion. The laboratory/tutorial sessions will be dedicated to practice and problem-solving exercises designed to reinforce the learning of the concepts being taught and to develop problem-solving skills.

Course Materials

Textbook and Other Learning Materials:

Title: Computer Science Illuminated (7th Edition)
Author(s): Nell Dale and John Lewis
Publisher: Jones & Bartlett Learning
ISBN: 9781284155617
eBook: 9781284214161
Price: $200.95, E-book: $76.50

Course Learning Outcomes

The course covers basic data representation and processing constructs necessary to problem-solving using computers. These include the development of algorithmic solutions to data processing problem through the use of workflow concepts such as sequence, selection, and iteration. In addition, the course addresses select fundamental problem-solving strategies such as the decomposition of data processing problems into multiple tasks whose functions are coordinated within a specified workflow. The flowchart-based programming Raptor tool will be used to provide hands on application of covered concepts using business problem solving examples.

The learning objectives are:

1. Develop an understanding of the fundamental concepts and elements underlying computing
2. Develop the analytical skills necessary for the design, testing and debugging of algorithmic solutions
3. Develop an understanding of algorithms commonly used in computer solutions of Real-world problems

Academic Integrity

Academic integrity is integral to your learning, the credibility of your degree or certification, and the integrity of the university as a whole. Senate Policy 60: Academic Integrity defines academic misconduct, provides a non-exhaustive list of examples of behaviours that may be considered as academic misconduct, and explains how academic misconduct concerns are evaluated and decided. The entirety of the policy applies in this course. As well, please note that submitting work created in whole or in part by artificial intelligence tools unless expressly permitted by the faculty/contract lecturer, is considered a violation of Policy 60.

Generative AI Course Policy

Use of Generative AI (e.g. ChatGPT, Grammarly, Perplexity, DeepL Translator) to develop or assist with any ideas or material submitted for coursework is expressly prohibited in this course. Use of Generative AI in this manner will be considered a breach of Policy 60.

Copyright

The course materials provided to you are copyrighted, and may not be shared without my express written permission. Do not share these materials (e.g. course outline, lecture slides, assignment instructions) with others and do not post them on the internet during the course, or at any time after. If you do so, Policy 60 will apply.

Academic Integrity Resources

To learn more about Policy 60 and how to avoid academic misconduct, please review and take advantage of these resources:

- Policy 60: Academic Integrity: www.torontomu.ca/senate/policies/academic-integrity-policy-60/
- Academic Integrity Office website: www.torontomu.ca/academicintegrity
- “Academic Integrity in Space” game: https://games.de.torontomu.ca/aio/#/
- “Academic Integrity in Cyberspace!” game: https://www.torontomu.ca/aic/#/
- Student Life and Learning Support: www.torontomu.ca/student-life-and-learning/learning-support

Topics and Course Schedule

Week	Topic	Readings
1	**Number Systems** **Topics:** • Number Sets • Binary Numbers • Binary Arithmetic **Learning Outcomes:** • Describe the different types of number representations • Apply conversions between number bases	Chapter 2
2	**Computer Representation of Data** **Topics:** • Standards of Computer Data Representation • Complement Representations of Numbers • Text Encoding and Compression Techniques **Learning Outcomes:** • Explain how different types of data are represented in a computer • Perform binary arithmetic operations	Chapter 3
3	**Digital Representation of Multimedia** **Topics**: • Digital representation of information • Digitizing sound and images • Sampling, Compression & Encryption **Learning Outcomes**: • Describe multimedia digitization concepts • Explain encryption concepts • Explain the challenges of Internet information exchange	Chapters 3 & 17
4	**Boolean Logic** **Topics**: • Gates & Boolean Logic • Circuits • Basics of computer operation **Learning Outcomes** • Explain what are Boolean expressions, truth tables, gates and circuits • Use Boolean expressions, logic diagrams and truth tables to describe the behavior of gates and circuits • Describe the basic components and organization of a computer • Explain the fundamentals of computer operations	Chapter 4 & 5

5	**Algorithmic Problem Solving** **Topics**: ● Problem Solving ● Algorithms ● Flowcharts **Learning Outcomes** ● Describe the essential activities of problem solving ● Develop algorithms for simple problems ● Specify algorithm using flowcharts and pseudo-code	Chapter 6 – Sections 6.5 – 6.6 Chapter 7: Section 7.1 Raptor Tutorial – Building a flowchart
6	● **Midterm**	
7	**Algorithm Design** **Topics**: ● Arithmetic Operations ● Workflow Control Structures **Learning Outcomes** ● Develop algorithms with scalar variables ● Develop algorithms using decision and repetition flow control structures	Raptor Help: (1) Math in Raptor (2) Program Control
8	**Advanced Algorithmic Problem Solving** **Topics**: ● Strings & Arrays ● File I/O ● Sub-flowcharts **Learning Outcomes** ● Write programs that read from and write to text files.	Chapter 7 – Section 7.3 Raptor Help: (1) Arrays (2) Advanced Topics - strings (3) Advanced Topics Files for I/O Subcharts
9	**Searching & Sorting** **Topics**: ● Sequential Search ● Binary Search ● Selection Sort ● Bubble Sort ● Insertion Sort **Learning Outcomes** ● Develop algorithmic solutions that make use of sequential and binary search algorithms ● Develop algorithmic solutions that make use of selection, bubble and insertion sort algorithms	Chapters 7 – Sections 7.4 – 7.5
10	**Modeling & Simulation** **Topics**: ● Simulation models ● Computer Graphics ● Gaming	Chapter 14

	Learning Outcomes • Explain what are computer simulations • Describe key issues of computer graphics • Explain the utility of computer modeling and simulation • Describe key issues of computer graphics generation	
11	**Computer Programming** **Topics**: • Imperative & Declarative Programming • Essential Concepts of Object Orientation **Learning Outcomes** • Describe the different paradigms of computer programming • Explain the elements and concepts of object orientation	Chapter 9
12	**Artificial Intelligence** **Topics**: • Applications of AI in Business • Artificial Neural Networks and Generative AI **Learning Outcomes**: • Explain the basic concepts underlying AI • Discuss ethical issues concerning the use of AI	Ch13 – Sections 13.1, 13.3, 13.4

Evaluation

The grade for this course is composed of the mark received for each of the following components:

Evaluation Component	Due Date	Percentage of Final Grade	Anticipated Return Date
Weekly Homework	Weeks 1-5 and Weeks 7-11	20%	Weeks 9 and 12
Midterm Exam	Week 6	30%	Week 8
Final Exam	TBA	50%	TBD
Final Grade		100%	
Note: Students must achieve a course grade of at least 50% to pass this course. At least 20% of the grade based on individual work will be returned to students prior to the last date to drop a course in good academic standing. For Fall 2025, this is Friday November 14, 2025. For Winter 2026, this is Friday March 27, 2026.			

University Policies

You are reminded that you are required to adhere to all relevant university policies found in their online course shell in D2L and/or on the Senate website. Please refer to the Course Outline Appendix for more detail.

Important Resources Available at Toronto Metropolitan University

- The University Libraries provide research workshops and individual consultation appointments. There is a drop-in Research Help desk on the second floor of the library, and students can use the Library's virtual research help service to speak with a librarian, or book an appointment to meet in person or online.
- Student Life and Learning Support offers group-based and individual help with writing, math, study skills, and transition support, as well as resources and checklists to support students as online learners.
- You can submit an Academic Consideration Request when an extenuating circumstance has occurred that has significantly impacted your ability to fulfill an academic requirement. You may always visit the Senate website and select the blue radio button on the top right hand side entitled: Academic Consideration Request (ACR) to submit this request.
  For Extenuating Circumstances, Policy 167: Academic Consideration allows for a once per semester ACR request without supporting documentation if the absence is less than 3 days in duration and is not for a final exam/final assessment. Absences more than 3 days in duration and those that involve a final exam/final assessment, always require documentation. Students must notify their faculty/contract lecturer once a request for academic consideration is submitted. See Senate Policy 167: Academic Consideration.
  Longer absences are not addressed through Policy 167 and should be discussed with your Chair/Director/Program to be advised on next steps.
- If taking a remote course, familiarize yourself with the tools you will need to use for remote learning. The Remote Learning Guide for students includes guides to completing quizzes or exams in D2L Brightspace, with or without Respondus LockDown Browser and Monitor, using D2L Brightspace, joining online meetings or lectures, and collaborating with the Google Suite.
- FAQs Academic Considerations and Appeals
- Information on Copyright for Faculty and students.
- Information on Academic Integrity for Faculty and students.

Accessibility

- At Toronto Metropolitan University, we are committed to ensuring that all courses are accessible to everyone and to removing barriers that may prevent some individuals from enrolling in courses.
- All technologies and tools used in this course are accessible.
- Students who discover an accessibility barrier with any of the course materials or technologies should contact their faculty/contract lecturer.
- As outlined in Policy 159: Academic Accommodation of Students with Disabilities, students are required to proactively consult with AAS, the faculty/contract lecturer, Department or Faculty, as soon as feasible, including prior to enrolling in a course or program, on any concerns they may have about their ability to meet the essential academic requirements of a course/program.

Academic Accommodation Support

Academic Accommodation Support (AAS) is the university's disability services office. AAS works directly with incoming and returning students looking for help with their academic accommodations. AAS works with any student who requires academic accommodation regardless of program or course load.

- Learn more about Academic Accommodation Support.
- Learn how to register with AAS.
- Learn about Policy 159: Academic Accommodation of Students with Disabilities

Academic Accommodations (for students with disabilities) and Academic Consideration (for students faced with extenuating circumstances that can include short-term health issues) are governed by two different university policies. Learn more about Academic Accommodations versus Academic Consideration and how to access each.

Wellbeing Support

At Toronto Metropolitan University, we recognize that things can come up throughout the term that may interfere with a student's ability to succeed in their coursework. These circumstances are outside of one's control and can have a serious impact on physical and mental well-being. Seeking help can be a challenge, especially in those times of crisis.

If you are experiencing a mental health crisis, please call 911 and go to the nearest hospital emergency room. You can also access these outside resources at anytime:

- Distress Line: 24/7 line for if you are in crisis, feeling suicidal or in need of emotional support (phone: 416–408–4357)
- Good2Talk: 24/7-hour line for postsecondary students (phone: 1-866-925-5454)
- Keep.meSAFE: 24/7 access to confidential support through counsellors via My SSP app or 1-844-451-9700

If non-crisis support is needed, you can access these campus resources:

- Centre for Student Development and Counselling: 416-979-5195 or email csdc@torontomu.ca
- Consent Comes First – Office of Sexual Violence Support and Education: 416-919-5000 ext 3596 or email osvse@torontomu.ca
- Medical Centre: call (416) 979-5070 to book an appointment

We encourage all Toronto Metropolitan University community members to access available resources to ensure support is reachable. You can find more resources available through the Toronto Metropolitan University's Wellbeing Central website.