

COURSE LISTING – WINTER 2026

Course	Course Name	Professor	Schedule	Location
CP8202	Advanced Software Engineering	Dr. M. Alalfi	Monday 14:00 - 17:00	KHE117
CP8204	Advanced Programming Languages	A. Ufkes	Tuesday 14:00 - 16:00 Wednesday 11:00 - 12:00	DSQ03 TRS1067
CP8205	Advanced Human-Computer Interaction	Dr. A. Scavarelli	Thursday 10:00 - 12:00 Tuesday 14:00 - 15:00	DCC208 TRS3176
CP8210	Topics in Data Science	Dr. A. Abhari	Friday 12:00 - 15:00	KHS338
CP8305	Knowledge Discovery	Dr. A. Hamzehlou Kahrizi	Friday 08:00 - 11:00	VIC104
CP8310*	Directed Studies: Master's	N/A	N/A	N/A
CP8312*	Directed Studies: Doctoral	N/A	N/A	N/A
CP8319	Reinforcement Learning	Dr. M. Soutchanski	Thursday 16:00 - 18:00 Tuesday 16:00 - 17:00	ENG101 ENG101
CP8320	Program Analysis for Cyber Security	Dr. M. Alalfi	Wednesday 10:00 - 13:00	EPH103
CP8324	Computational Geometry	Dr. Y. Bahoo	Tuesday 10:00 - 13:00	ENGLG04
CP8328	Theory of Computation	Dr. O. Falou	Wednesday 15:00 - 18:00	VIC104
CP8337*	Directed Studies: Research Methodologies	N/A	N/A	N/A

* Requires a Directed Studies / Restricted Courses Request Form for enrollment, available at <https://www.torontomu.ca/cs/graduate/forms-guidelines/>

Notes:

1. Winter 2026 classes begin Friday, January 9, 2026.
2. Refer to the Significant Dates for course ADD and DROP deadlines:
<https://www.torontomu.ca/graduate/calendar/significant-dates/>
3. See the Graduate Calendar for Program Curriculum and Course Descriptions:
<https://www.torontomu.ca/graduate/calendar/programs-and-courses/>

COURSE DESCRIPTIONS

CP8202 Advanced Software Engineering

Modern approaches to software development are studied including requirements analysis, system design techniques, formal description techniques, implementation, testing, debugging, metrics, human factors, quality assurance, cost estimation, maintenance, and tools. 1 Credit. *Note: This course is cross-listed with undergraduate course CPS831, for which the pre-requisite is CPS731.*

CP8204 Advanced Programming Languages

A study of the principles, concepts, and mechanisms of computer programming languages - their syntax, semantics, and pragmatics; the processing and interpretation of computer programs; programming paradigms; and language design. Additional topics will include language design principles and models of language implementation. 1 Credit. *Note: This course is cross-listed with undergraduate course CPS506, for which the pre-requisite is CPS209.*

CP8205 Advanced Human-Computer Interaction

Current trends in user interface technology; topics include alternative interaction devices, user interface tools, and interface modeling techniques. Usability testing and human factors. 1 Credit. *Note: This course is cross-listed with undergraduate course CPS613, for which the pre-requisite is CPS209.*

CP8210 Topics in Data Science

This course presents concepts related to data science research activities including data management and analytics, data modeling, structured and unstructured data, regression models, social data analysis, web and data mining, information retrieval, text analysis and natural language processing. 1 Credit.

CP8305 Knowledge Discovery

Steps in the process of knowledge discovery: data preprocessing, data mining, post-processing and knowledge utilization. Preprocessing: data cleaning, integration, transformation and reduction. Data mining methods: association rules, classification and clustering. Post-processing: knowledge evaluation, interpretation, presentation and visualization. Knowledge discovery and data management. Possibly other selected topics in knowledge discovery. 1 Credit.

CP8310 Directed Studies: Master's

This course is for Master's students who wish to gain knowledge in a specific area for which no graduate level classes are offered. Students are required to present the work of one term (not less than 90 hours in the form of directed research, tutorials and individual study) in an organized format. 1 Credit. *Not available to Course option students.*

CP8312 Directed Studies: Doctoral

This doctoral-level directed studies course provides an opportunity for students to engage in in-depth research and exploration of advanced topics in computer science that are not covered by existing courses in the program. Students will work closely with a faculty advisor to identify and investigate emerging areas of interest or specialized topics, which may include interdisciplinary applications, novel computational methods, or theoretical advancements. 1 Credit.

CP8319 Reinforcement Learning

This course focuses on topics related to reinforcement learning. The course will cover making multiple-stage decisions under uncertainty, heuristic search in planning, Markov decision processes, dynamic programming, temporal-difference learning including Q-learning, Monte Carlo reinforcement learning methods, function approximation methods, and the integration of learning and planning. 1 Credit. *Note: This course is cross-listed with undergraduate course CPS824, for which the pre-requisite is CPS305 and (MTH308 or MTH304).*

CP8320 Program Analysis for Cyber Security

This course will focus on Language-Based Security, an area of research that studies how to enforce application-level security using program analysis techniques. This includes techniques used to automate the detection\prevention of security vulnerabilities caused by coding malpractice or security-policy misconfigurations; the study of the design and implementation of secure programming languages; and techniques used to enforce correct usage of security Application Programming Interfaces. 1 Credit

CP8324 Computational Geometry

Computational Geometry studies problems which can be described geometrically. Such problems arise from our environment as we deal with geometric objects and their interactions, such as in computer graphics, robotics, and manufacturing. In this course, students learn to design algorithms and data structures for geometric problems. These problems include but are not limited to the following topics: convex hull, Voronoi diagram, triangulation, visibility, and geometric data structures. 1 Credit.

CP8328 Theory of Computation

This course introduces students to the theory of computation. Topics include: regular expressions and languages, finite state automata, context-free languages, pushdown automata, Turing machines, computability, and NP-completeness. 1 Credit.

CP8337 Directed Studies: Research Methodologies

This course offers students the opportunity to engage in individualized, in-depth study of research methodologies in computer science under the supervision of a faculty member. The course is designed to develop advanced skills in designing, conducting, and evaluating research, emphasizing the critical analysis of existing work, research design principles, and the ethical dimensions of conducting research. Students will work closely with their supervisor to tailor the course content to their research interests and academic goals. Pass/Fail.