

**Course:** PSCD02, Current Questions in Mathematics and Science

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Please use only UofT email accounts. When composing your email, please use professional language. Be sure to include the course code as part of the subject line and sign the email with your first and last name, as well as your student ID. Your email will be answered as soon as possible.

**Web:** PSCD02 maintains a Quercus web space which archives a variety of course-related information including: grades, class announcements, lecture and lab materials, contact information and links to outside resources. In addition, class emails will periodically be sent via Quercus. To receive these emails, you must have a valid “utoronto.ca” email account registered with ROSI.

**Office:** EV356; office hours: by appointment

**Lectures:** Room HL B110, Thursday 10am–noon

**Tutorials:** Room MW 264, Thursday noon-1pm

**Recommended Texts:** 1) M. A. Nielsen and I. L. Chuang, Quantum Computation and Quantum Information, 2) E. Rieffel and W. Palak, Quantum Computing: A Gentle Introduction

**Marking Scheme:** Participation in course discussions 20%, homework assignments 80%.

**Course Description:** In Winter 2023, the main theme of PSCD02 course will be emerging technology of quantum computing. It poses a billion dollar question whether quantum computing will be able to solve any useful problem that classical computers cannot? After short intro/review of quantum mechanics, we will consider main known quantum computing algorithms and their applications in various areas of science and technology: chemistry, physics, math, and finances. Current leading instrumental technologies for quantum computer hardware employed in D-Wave, Google, Rigetti machines will be reviewed as well. Tutorials will not only focus on solving theoretical problems but also will provide first-hand experience in coding quantum computer simulator from the main hardware vendors: IBM, Rigetti, and Google.

**On Academic Integrity:**

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student’s individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto’s Code of Behaviour on Academic Matters ([www.governingcouncil.utoronto.ca/policies/behaveac.htm](http://www.governingcouncil.utoronto.ca/policies/behaveac.htm)) outlines the behaviours that

constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

1. Using someone else's ideas or words without appropriate acknowledgement.
2. Submitting your own work in more than one course without the permission of the instructor.
3. Making up sources or facts.
4. Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

1. Using or possessing unauthorized aids.
2. Looking at someone else's answers during an exam or test.
3. Misrepresenting your identity.

In academic work:

1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see [www.utoronto.ca/academicintegrity/resourcesforstudents.html](http://www.utoronto.ca/academicintegrity/resourcesforstudents.html)).

### **On Accommodation:**

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs.

For more information on services and resources available to instructors and students, please contact Tanya Lewis, Director, Academic Skills and Accessibility Services at 416-978-6786; [tanya.lewis@utoronto.ca](mailto:tanya.lewis@utoronto.ca).