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<b>Department:</b>	Economics
<b>Course Title:</b>	Topics in Risk Management
<b>Instructor:</b>	Alan Yang
<b>Contact Information:</b>	<a href="mailto:xian.yang@utoronto.ca">xian.yang@utoronto.ca</a>
<b>Course Notes Website:</b>	<a href="https://q.utoronto.ca/">https://q.utoronto.ca/</a> (UTOR login password required)
<b>QUERCUS</b>	
<b>Lecture Times &amp; Location: (Including Office Hours/Tutorial)</b>	<ul style="list-style-type: none"><li>– <b>Time:</b> Jan 6 – April 4, 2025 on Monday and Friday from 19:00-21:00 (including office hour &amp; tutorial)</li><li>– <b>Class Room Location:</b> WO35-WoodsWorth College Residence 321 Bloor Street West Toronto, Ontario, M5S 1S5</li></ul>

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### Course Description:

This course provides a comprehensive introduction to the real-world application of Financial Risk Management modeling theory with an emphasis on the industry best-practice methodologies. The course covers major issues in, such as: Liquidity Risk, Market and Credit Risk Measurement, Counter Party Credit Risk, Economic Capital, Regulatory Capital, Credit Value Adjustment, Scenario Generation, Stress Testing, Back Testing and Portfolio Credit Risk Management. The course also covers the motivation of Enterprise-wide Risk Management and the application of *Machine Learning* to the Financial Risk Management. As the course focuses on Financial Engineering approaches, *Jupyter Notebook with Python programming language*-based assignments will help to illustrate the concepts.

*Note:* There may be not enough time to cover all the interesting topics, the focus varies from term to term. Throughout the term, the course instructor will help to go over the course notes, answer student questions and discuss assignments. There will also in class random quiz questions.

### Course Objectives:

The course is intended to introduce to students the main idea about how to implement financial risk management by means of financial engineering. After completing this course, students will be able to:

- Differentiate and describe major risks and associated risk factors in the financial market;
- Spec financial risk models and use Jupyter Notebook to quantify financial risks based on real world financial engineering practices.
- Explain and debate on various issues in the financial risk management.
- Creative thinking of FRM by using Artificial Intelligence

**Prerequisite:**

MA, MFE and PH.D Economics Department are qualified to take this course. If you are a graduate student outside the economics department who would like to take this course, please apply from this link:

<http://www.economics.utoronto.ca/index.php/index/graduate/nonEconCourseAdd>

**About Marks:**

Assignments & Projects & Final Exam: 60%

In Class Quiz: 30%

Performance: 10%

**About Assignments:**

- All the assignments will be posted on the QUERCUS Course Portal. It can be finished at home but should be finished independently and submit online before the deadline.
- Style of Assignments: there will be Jupyter Notebook exercises or using Jupyter Notebook and financial engineering approaches learned in the class to quantify risks.

**About Projects & Final Exam (TBD):**

- Projects are large assignments and can be finished in groups.
- Final Exam: to be determined.

**About Quiz:**

- All quizzes are in class tests, involving questions related to course notes and related concepts.

**About Reference Books:**

- Reference books are not required. Relevant papers and course notes that cover each topic will be released online or on course portal before class starts.
- Regarding the Python programming language within Jupyter Notebook, numerous free web resources offer valuable learning opportunities. You can explore tutorials by searching for keywords like 'Jupyter Notebook tutorial' or 'A gallery of interesting IPython Notebooks'. For instance, informative content is available through web postings such as:

Tutorial 1: [YouTube link](#)

Tutorial 2: [YouTube link](#)

These tutorials guide you through the process of downloading Anaconda, installing it, and selecting the latest version of Python 3.x for practice.

Note: Access to a computer capable of running Jupyter Notebook is crucial for this course.

**Articles and Other Materials:**

- Academic journal articles are available in electronic form on *J-Store* at the U of T Library.
- Where materials are available over the Internet, I will provide the web links.