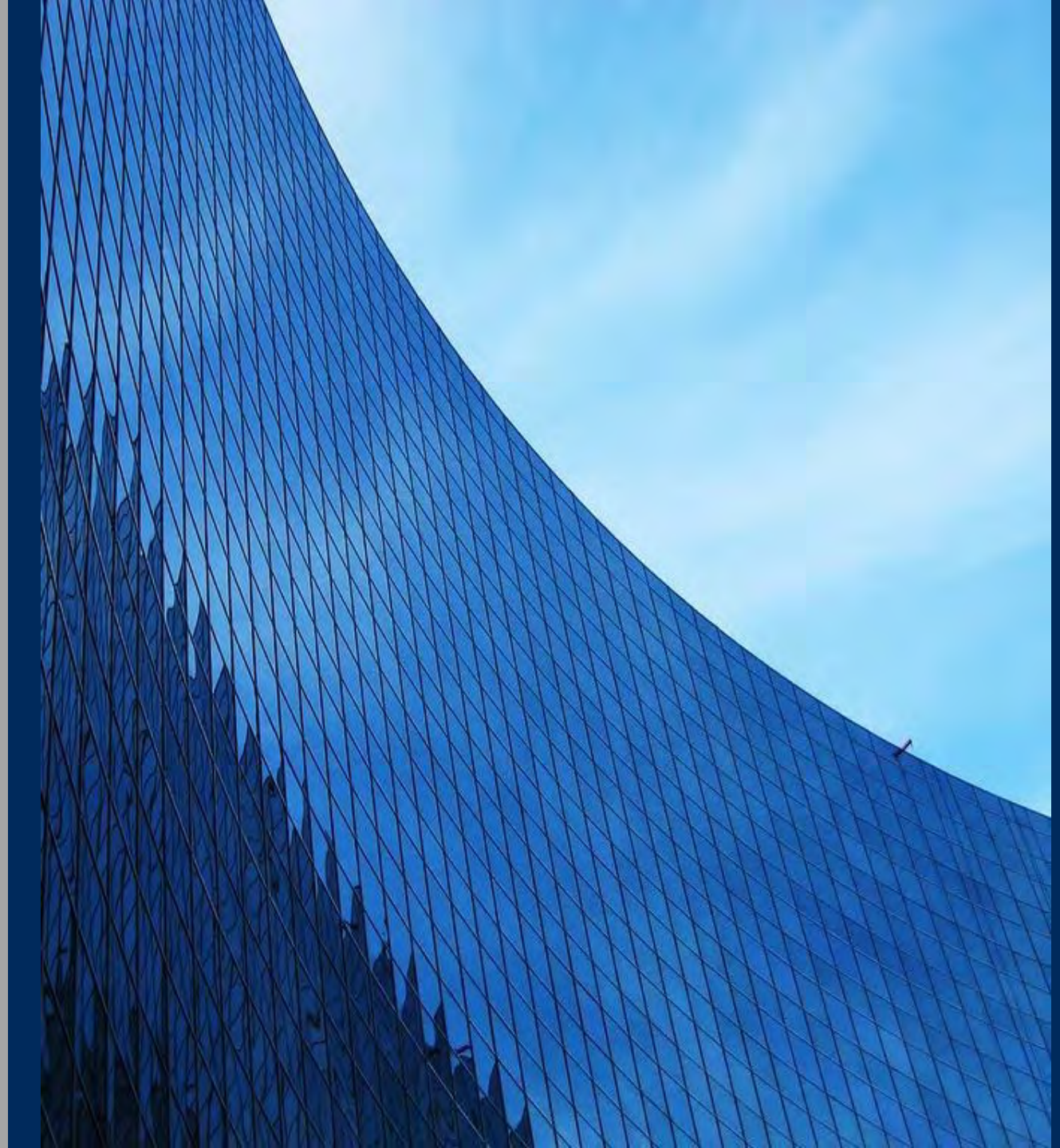

Master of Financial Insurance

A professional program founded on data science, finance and insurance.

mfi.utoronto.ca

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MASTER OF financial insurance

The MFI Team

Sarah Lee
Program Coordinator
sarahj.lee@utoronto.ca

Professor Andrei Badescu
Program Director
andrei.badescu@utoronto.ca

Shari Kurgatnikov
Outreach & Internship Administrator
shari.kurgatnikov@utoronto.ca

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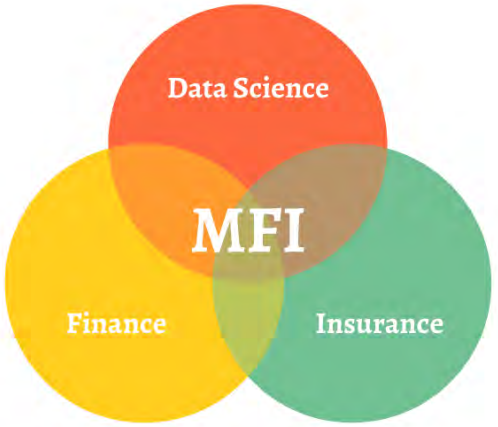
Why Professional Graduate Studies after Undergraduate?

- Broaden your knowledge and expertise
- Stay competitive into a rapid evolving industry
- Unlock diverse career opportunities
- Develop a transferable skillset applied to various sectors
- Build professional connections

Program Overview

- The Master of Financial Insurance (MFI) is a 1-year professional course-based masters
- The program focuses on the interface of **data science, finance, and insurance modelling** providing students with a sophisticated understanding of their **complex interaction**
- Number of courses taught by **industry professionals** and includes a paid internship



MFI: Where Finance, Insurance and Data Science Intersect

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Program Structure

TERM 1

(September - December)

Mathematically sophisticated and requires solid training in mathematics & statistics

TERM 2

(January – April)

Applied coursework focused on practical issues and industry insights

TERM 3

(May – August)

Mandatory work term – minimum 16 weeks

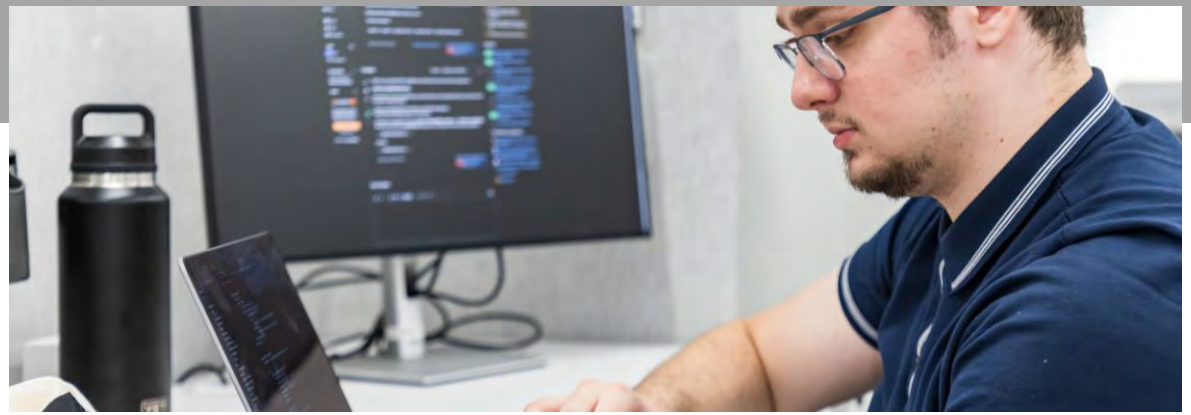
Curriculum
Before the Program Officially Starts

We accept students coming from various undergraduate programs and schools, and therefore in July and August we offer 4 mandatory online “Refreshers” to prepare them be ready when the program starts:

- **Life Insurance Mathematics**
- **Mathematical Finance**
- **Statistical Learning**
- **Programming**

A final group project will be presented in front a committee in the first week of classes in September.

Curriculum
Fall Term



Applied Probability for Mathematical Finance (0.5 FCE)

Stochastic calculus, financial derivatives: equity, interest rate and commodities, stochastic volatility and jumps.

Applied Time-Series Analysis (0.5 FCE)

Time series modelling including AR, MA, ARMA, ARCH, GARCH, VAR, co-integration, non-linear models, quantile regression, volatility forecasting.

Data Science for Risk Modelling (0.5 FCE)

Probability and stochastic loss models and estimation, multi-class logistic regression, generalized linear model, Expectation-Maximization, Hidden Markov models, Neural nets, RNNs, Auto-encoders.

Life Insurance Mathematics (0.5 FCE)

Life insurance & annuity valuation, premium reserving, multiple decrements, multiple life insurance, expense loading, pension mathematics.

Curriculum
Winter/Spring Term

Insurance Risk Management (0.5 FCE)

Insurance and annuity guarantees, asset-liability management, regulatory and economic capital, insurance securitization, longevity bonds & derivatives, reinsurance, CAT bonds and options.

Finance & Insurance Case Studies (0.5 FCE)

Industrial case studies, e.g. Solvency II, Pension Benefits Act, Valuing and Managing Complex Annuity Riders.

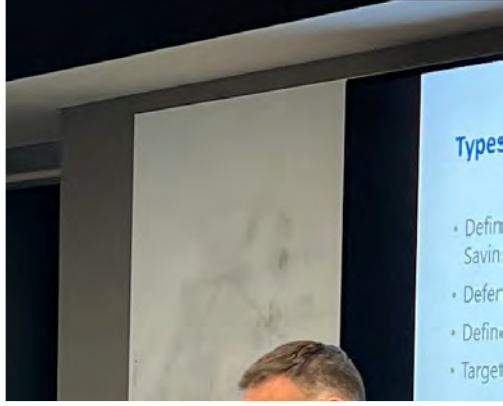
Data Analytics in Practice (0.25 FCE)

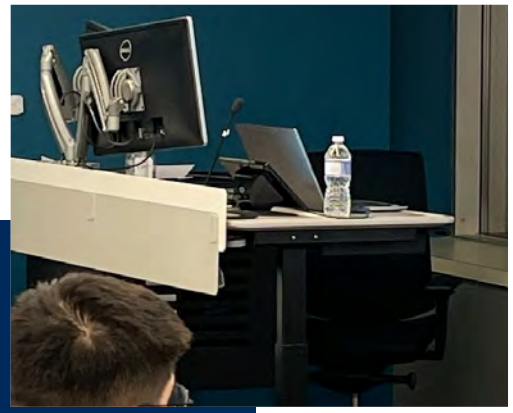
Machine and statistical learning methods; building loss models; techniques and practical know-how to present results to practitioners.

Numerical Methods for Finance (0.5 FCE)

Monte Carlo methods, simulating SDEs, control variates, Brownian bridges, PDEs and finite difference methods.

Guest Seminar Series (0.5 FCE)





Current topics in finance and insurance, e.g., pensions, valuation, risk management, credit risk, sustainability, regulation and accounting.

Sample Talk Titles:

- Climate Change Macro Perspective – UNECE
- IFRS 9 Accounting Regime Introduction - KPMG
- Global Foreign Exchange Markets – BMO Capital Markets
- Cryptocurrencies and Digital Assets – FDP Institute
- Variable Annuities and Associated Risks - Berkshire Hathaway Reinsurance
- Introduction to Credit Derivatives – OTPP
- Control & Governance of Complex Cashflow Projection Models – Munich Re
- Pricing and Reserving in P and C insurance – U of Toronto
- Equity-Linked Insurance – OTPP
- Retail Credit Risk Modelling - BMO
- Regulatory Capital in the Canadian Life Insurance Industry – TD Insurance
- Pension Funding and Design Planning – OP Trust
- Platform for Actuarial Modeling – AON Pathwise

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Course Elective (0.25 FCE)



- STA4517H - Foundations & Trends in Causal Interference
- **STA4530H – Derivatives for Institutional Investing**
- STA4246H – Research Topics in Mathematical Finance
- STA4528H – Dependence Modelling with application to Risk Management
- STA4525H – Demographic Methods
- STA4526H – Stochastic Control & Applications in Finance
- STA4522H - The Measurement of Statistical Evidence
- STA4517H – Information Visualization
- STA4514H – Modelling and Analysis of Spatially Correlated Data
- STA4513H – Statistical Models of Networks, Graphs, and Other Relational Structures
- STA4510H – Insurance Risk Models II
- STA4509H – Insurance Risk Models I
- STA4508H – Topics in Likelihood Inference
- STA4506H – Non-stationary Time Series Analysis
- STA4505H – Applied Stochastic Control: High Frequency and Algorithmic Trading
- STA4504H – An Introduction to Bootstrap Methods
- STA4503H – Advanced Monte Carlo Methods and Applications
- STA4501H – Functional Data Analysis and Related Topics
- STA4500H – Statistical Dependence: Copula Models and Beyond


Elective Course (0.25 FCE) from STA 45##H level courses

[not all courses offered every year]

https://www.statistics.utoronto.ca/curriculum-courses/

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NEW COURSE!!
Business Fundamentals
(0.25 FCE)

Professional Skills for Quantitative Minds:
Designed as an integral part of the MFI comprehensive training, this course aims to build the essential soft skills needed for workplace success.

Suite of topics will cover:

Public Speaking & Storytelling
Presentation Skills to Different Audiences
Networking 101
1:1 Coaching Support
Resume & Cover Letter Bootcamp
LinkedIn Profile Development
Culture, Connection, & Communication for the Workplace
Interview Skills

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MASTER OF financial insurance

The Perfect Applicant!

Strong Quantitative Background

Statistics; Mathematics; Actuarial Science; Economics; Engineering; Computer Science; Finance etc.

High GPA: A solid academic track record particularly in analytical courses. University of Toronto **B+ (3.3/4.0 GPA/77%) in higher level courses (final year)**

Programming Skills: Experience with programming languages [Python; MATLAB;R]

Great Communication; Clearly be able to articulate ideas in written and spoken English and able to explain complex concepts to non-technical audiences. Teamwork!

Motivation & Fit: An interest in financial world – follow the news!

Clear Career Goals: How does the MFI Program fit in ?

MASTER OF financial insurance

Funding

- Discretionary Entrance Award
- MFI Equity Award – financial support for students from underrepresented groups
- NEW!! Canadian Excellence Award – financial support for high achieving Canadian citizens

- OSAP (or equivalent) – domestic students
- Student credit lines – domestic or international (Prodigy & MPower)
- TA Positions – students eligible to apply
- Paid Internship
  16-weeks or longer

https://www.statistics.utoronto.ca/MFI-Financial-Information-and-Awards

MASTER OF financial insurance

Internship

May 1 - August 31 (16 weeks minimum duration)

Paid Placement or Faculty Project

Report & Presentation at the Grad Expo

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MASTER OF financial insurance

Professional Development

Professional Development Course

Résumé and Cover Letter

Culture & Communication

Networking/LinkedIn

Interview Techniques

Presentation Skills and more!

Networking Events

MFI Reception

Employer Information Sessions

Guest Lectures

Graduate EXPO

Alumni Network

Mentorship Program

Alumni Panels

Mock Interviews

Industry Connections

AIMA

Fields Institute Seminar Series

CAASA

IAQF

ASNA Conference

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MASTER OF financial insurance

Industry Partners

Why should you choose MFI?

- Unique blend of disciplines
- Learn from the best
- Hands-on experience through internships
- Comprehensive skill development
- Gateway to endless opportunities

Key Takeaway

By choosing the MFI you not only improve your actuarial skills, but you will significantly enhance your employability preparing yourself for higher impact professional roles !!!

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Thank you!