

UNDERGRADUATE MATH SEMINAR

This week, the math seminar will return to its usual location in Bailey Hall, and will still be at its usual time:

DATE: **THURSDAY, October 12**

Time & **12:30 – Pizza in the Bailey 204**

Location: **12:50 – 1:45 Seminar in Bailey 207**



In this seminar, **Professor Leon Tatevossian**, who works in Finance and Risk Engineering, and Quantitative Finance, and teaches **Quantitative Finance** at **NYU-Tandon** and **NYU-Courant**, will present the following talk.

Title: Modeling Stock-Price Evolution: An Introduction to Diffusion Processes

Abstract: The study of stock-price dynamics is formulated via the interplay between statistical analysis of historical behavior (examining attributes like the potential stability of the running variability) and a “parametric” approach, where a specified probabilistic model is taken as the driving process.

The model direction of these two themes leads to the concept of stochastic differential equations (SDEs), a fundamental tool of “continuous time finance.” I’ll discuss the most-familiar SDE for stock-price propagation and explain the many ways in which observed behavior and economic arguments challenge the validity (and implications) of that model.

Leon Tatevossian was a director in Group Risk Management at RBC Capital Markets, LLC from 2009-16, where he focused on securitized-products market risk in secondary trading, origination, and proprietary trading areas. He has twenty-eight years of experience in the fixed-income capital markets (trader, quantitative strategist, derivatives modeler, and market-risk analyst), with a product background that includes US Treasury securities, US agency securities, interest-rate derivatives, mortgage-backed securities, asset-backed securities, and credit derivatives. In addition to RBC, his work experience includes positions at several large sell-side firms (Banc of America Securities, Goldman Sachs, Citicorp Securities, and Morgan Stanley).

Leon has taught courses in quantitative finance at Columbia University and at Baruch College–The City University of New York (Department of Mathematics). **From 1985-88 Leon was an instructor in the Department of Mathematics at Union College.**

Pre-Approval for (Certain) Winter Courses: MTH 105, 110, 113, 117, 199

Pre-Approval for winter course offerings is now open! From the [Union pre-approval website](#), “For Winter Term 2024 registration, Union College will again have a list of courses that require **Pre-Approval**. The Pre-Approval process allows students to be “pre-approved” and registered for some courses prior to the official registration period. Our Pre-Approval process allows departments and faculty members to make sure that all Union College students are making appropriate progress towards graduation.”

This winter term, **five math courses require pre-approval:**

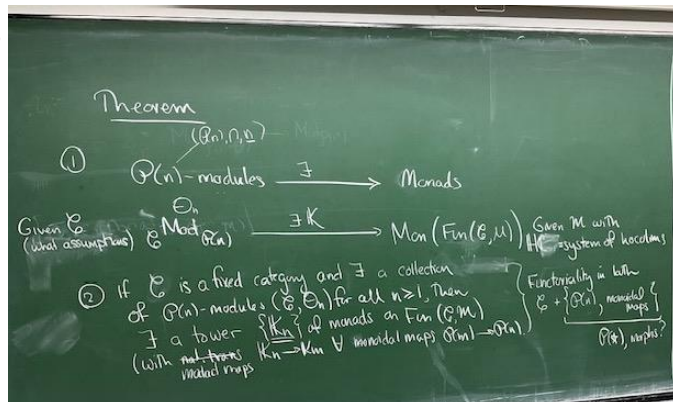
MTH 105, 110, 113, 117, and 199

If you would like to enroll in any of these courses, you need to complete the math department’s [Pre-Approval Survey](#). The due date for this is **OCTOBER 18**. After the department reviews the pre-approval requests, selected students will be automatically registered for Pre-Approved courses prior to their official registration appointments (which begin October 30).

Some Math Faculty Summer Highlights

While we are still holding on to the last bits of summer, here is one final bullet point highlighting the activities of some of the math faculty this past summer.

- **Professor Brenda Johnson** reported, "I spent a week at the Hausdorff Research Institute for Mathematics (in Bonn, Germany) co-leading a research group for the fourth Women in Topology workshop. I also enjoyed spending time on Block Island vacationing with family.



Some summer work by Professor Brenda Johnson

The 7th Annual WiDS Datathon 2024 Challenges: Equity in Healthcare

Information modified from the Women in Data Science (WiDS) website:

"Women in Data Science (WiDS) is thrilled to launch its 7th annual WiDS Datathon competition. This year's challenges focus on **Equity in Healthcare**, where participants will analyze a rich, real-world oncology dataset provided by Gilead Sciences to identify possible inequities in patient care, such as time to treatment.

"Addressing healthcare inequity is critical and has an extensive positive impact on health, society, and the economy. Women often encounter distinct health challenges and stand to gain significantly from efforts to ensure equity in access to healthcare. Achieving health equity involves addressing disparate treatments based on demographic and societal factors so that in the future women can achieve their highest level of health and well-being.

"This challenge involves a machine learning task to predict time to treatment of women patients who are diagnosed with metastatic triple negative breast cancers (metastatic TNBC). Metastatic TNBC is considered the most aggressive TNBC, and women who are diagnosed with it are among those who are in the most urgent need for timely treatment.

"You will develop a model to predict how many days it takes for a patient to receive the first treatment for their cancer diagnosis based on patients' characteristics. Differences in the wait time to get treatment is a good proxy for disparities in healthcare access. You are also encouraged to go beyond the predictive challenge and engage in discussions in order to understand the real-world implications of the results.

Interested in this global challenge?

Ready to hone your data science skills?

Want to engage with other college students around the world?

CONTACT Professor Joy Wang (wangj@union.edu) to participate in a Union team!

Requirement: some basic understanding of mathematics, statistics, and machine learning, knowledge of R and/or Python programming or other statistical software, knowledge of exploratory data analysis.

Skill-building resources will be shared and guidance will be provided. We will use packages such as Scikit-learn, Tensorflow, XGBoost, etc.