MASTER of SCIENCE PROGRAM
Mathematics in Finance

NEW YORK UNIVERSITY
Courant Institute of Mathematical Sciences

COURSE SEQUENCE ADVICE FOR PART TIME STUDENTS

Mathematics in Finance MS students must complete 11 courses selected from the Mathematics in Finance curriculum. They must also complete the Project and Presentation course associated with their Masters Project. There are seven required courses: Derivative Securities, Stochastic Calculus, Continuous Time Finance, Computing in Finance, Scientific Computing, Computational Methods for Finance and Risk and Portfolio Management with Econometrics (previously called Capital Markets and Portfolio Theory).

Part-time students must plan carefully, since many courses have prerequisites. With approval of the instructor students may substitute equivalent knowledge for a course prerequisite. In particular, those who have professional experience building financial systems applications do not require Computing in Finance.

In choosing what courses to take, consider your background and what courses are prerequisites for other courses. Students with a lot of software experience often petition to omit Computing in Finance; those with a lot of economics background often seek waivers of Risk and Portfolio Management with Econometrics.

Part-time students may take Project and Presentation either in the fall or spring semesters. While this course has no formal prerequisites, a student must have done enough coursework to provide sufficient background for a substantial project. Approval from Professor Kolm is required concerning the project topic and advisor.

In planning your curriculum, it may be useful to work backward. For example, Computational Methods for Finance requires Computing in Finance, Scientific Computing, and Continuous Time Finance. Before taking Continuous Time Finance, you need both Stochastic Calculus and Derivative Securities. To provide some flexibility, we offer some classes in both the Fall and Spring semesters. Please refer to our website for a complete list of all our courses.

The following table is intended to help each student plan a course sequence that is consistent with all prerequisites. First we list the Math Finance courses, indicating their dependencies. Then we offer two examples of feasible course sequences.

Required Courses (Total of 6 Courses + Project & Presentation)

	Courses Offered Fall Semester	Courses Offered Spring Semester
Level 1	1. Derivative Securities 2. Risk and Portfolio Management with Econometrics 3. Stochastic Calculus 4. Computing in Finance	1. Derivative Securities 2. Risk and Portfolio Management with Econometrics 3. Stochastic Calculus
Level 2	5. Scientific Computing 6. Continuous Time Finance (1, 3) 7. Project & Presentation	5. Scientific Computing 6. Continuous Time Finance (1, 3) 7. Project & Presentation

Electives (Choose 5 Courses)

Courses Offered Fall Semester	Courses Offered Spring Semester
A. Time Series Analysis and Statistical Arbitrage (1,3,4,7) B. Case Studies in Financial Modeling (3,4,9) C. Computational Methods for Finance (7,9) D. Regulation and Regulatory Risk Models (1,2) E. Advanced Econometric Modeling and Big Data (1,2,4) F. Data Science in Quantitative Finance (1, 2, 4) G. Fixed Income Derivatives: Models & Strategies in Practice (1,4) – half credit course H. Credit Analytics: Bonds, Loans, and Derivatives (1, 4) – half credit course	A. Interest Rates & FX Models (1,3,4) B. Advanced Risk Management (1, 2,) C. Algorithmic Trading and Quantitative Strategies (2,4) D. Securitized Products & Structured Finance (1,3) – half credit course E. Energy Markets and Derivatives (1,3) – half credit course F. Advanced Topics in Equity Derivatives (1,3,4) – half credit course G. Market Microstructure (1,2,4) – half credit course H. Active Portfolio Management (1, 2, 4)

SAMPLE COURSE SEQUENCES (Assuming a Fall Start)

This sequence omits Computing in Finance	*This sequence omits Risk and Portfolio Management with Econometrics*
(Fall) Derivative Securities & Stochastic Calculus	(Fall) Derivative Securities & Computing in Finance
(Spring) Risk and Portfolio Management with Econometrics & Scientific Computing	(Spring) Scientific Computing & Stochastic Calculus
(Fall) Continuous Time Finance & Fixed Income Derivatives: Models & Strategies in Practice & Credit Analytics: Bonds, Loans, and Derivatives	(Fall) Continuous Time Finance & Time Series Analysis and Statistical Arbitrage
(Spring) Advanced Risk Management & Interest Rate and FX Models	(Spring) Interest Rate and FX Models & Advanced Risk Management

(Fall) Computational Methods For Finance & Time Series Analysis and Statistical Arbitrage	(Fall) Computational Methods For Finance & Regulation and Regulatory Risk Models
(Spring) & Project and Presentation	(Spring) Algorithmic Trading and Quantitative Strategies & Project and Presentation