

MA (FIM) 549—Financial Risk Analysis

Spring Semester 2019

T/Th 11:45am-1:00pm Burlington 1202

Instructors

Richard Ellson	Office: SAS 3204	Email: rwellson@ncsu.edu	Hours: TBD
Ram Valluru	Office: SAS 3126	Email: ramvalluru@yahoo.com	Hours: TBD
Tao Pang	Office: SAS 4116	Email: tpang@ncsu.edu	Hours: TBD

Prerequisites

- Calculus: MA 231/242 or equivalent; advanced calculus beneficial
- Probability/Econometrics: MA 421 or equivalent
- Financial Markets: some fundamental understanding of financial markets is important

Textbook Required: *Risk Management and Financial Institutions*, John C. Hull, 5th edition, Wiley, 2019

Overview of the Course

This course will be co-taught by Dr. Ellson, Dr. Valluru and Dr. Pang. Dr. Ellson will be responsible for about 2/3 of the chapters covered in the course, and the remainder will be covered by Dr. Valluru and Dr. Pang. The course can be broken down into 3 components. Note that Dr. Ellson worked on Wall Street for 28 years in the area of fixed income and derivatives (credit default swaps and interest rate swaps), and Dr. Valluru has more than 15 years of management and leadership experience in Advanced Analytics, Modeling & Risk Management in Banking, Finance and Insurance Sectors. A significant portion of some lecture material will reflect real world applications based on their experience and knowledge in fixed income research, trading, portfolio management and insurance.

Part 1 (Chapters 1-8, 24)

- 1) Basics of Risk Management
- 2) Financial Institutions
- 3) Trading, Financial Crises, and Risk Management

Exam1: Th, 02/07/19

Part 2 (Chapters 9-14)

- 1) VaR→Value at Risk—the Basics
- 2) Volatility and Correlation
- 3) Market Risk VaR: Historical Simulation and Model-Building

Exam 2: Th, 03/21/2019

Part 3 (Selected Chapters from 15-19; Selected 20-27)

- 1) Regulation
- 2) Default/Credit Risk
- 3) Scenario Analysis
- 4) Model Risk

Exam 3: Th, 04/25/2019

No final exam.

Determination of Grades

1. There will be 3 exams during the semester. Each exam will cover one of the sections described above. The final exam will be on the last day of class. It will not be cumulative. **Each exam will represent 25% of the final grade.**
2. At various points in the semester, there will be problems assigned. This is to ensure that students understand and are able to use various concepts and analytics that will be examined during the semester. The assignments will be made by both Drs. Ellson and Pang. You may work with other students on these assignments. **The homework assignments will be 20% of the final grade.**
3. Class participation and discussion of the topics is important. **5% of the final grade will be based on students' class activity.**

Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Services Office at Suite 2221, Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.01) (<https://policies.ncsu.edu/regulation/reg-02-20-01/>).