

Spring 2024

## **FIN 310-002: Data-Driven Financial Modeling**

Ai Chih Chang

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**Class Time & Location:** M/W 10AM - 11:20AM CAB 3052

**Prerequisites:** MGMT216, FIN218, FIN315

**Office Hours:** by appointment via WebEx (preferable Wednesday 11:30AM-12:30PM)

**Data-Driven Financial Modeling**  
**FIN310-002**  
**Spring 2024**

### Course Overview

This course introduces basic and innovative financial modeling techniques and equips students with new analytic and modeling tools to tackle rapidly changing and dynamic financial markets. In particular, this course delivers modelling frameworks such as regression analysis, forecasting, Monte-Carlo simulation, optimization, and binomial trees; it illustrates how to apply these frameworks in financial contexts such as portfolio management, term-structure estimation, capital budgeting, risk measurement, and risk analysis in discounted cash flow models. The modelling tools will be illustrated by applying them to a variety of real-world financial data that can be obtained directly from Bloomberg Terminals and other sources.

### Optional Course Materials

- [1] “Corporate Finance”, Ross, S., Westerfield, R., & Jaffe, J. ISBN 978-0078034770, McGraw-Hill, 12th edition, 2019.  
[2] “Financial Analysis with Microsoft Excel”, Timothy Mayes, ISBN-10: 0357442059; ISBN-13: 9780357442050, Cengage Learning, 9th Edition, (January 22, 2020).

### Learning Outcomes

Upon successful completion of this course, you should be able to do the following:

- 1) Develop a variety of financial models with Excel Spreadsheet.
- 2) Gain mastery of useful skills to process and analyze financial data.
- 3) Develop a practical understanding of the financial theories.
- 4) Use financial models and theories to address various financial planning and pricing problems.
- 5) Communicate findings from financial models clearly and concisely.

## Expected Learning Outcomes

In addition to content specific course objectives, the course intends to help students develop a wide range of analytical, communication, interpersonal, and technology skills, namely:

Competencies	Outcome
LC 1 Develop an Understanding of Financial Theories and the Technical Knowledge to Solve Financial Problems	LO 1.1 Our students will demonstrate the knowledge and application of financial fundamentals
	LO 1.2 Our students will demonstrate the ability to solve financial problems using financial modeling
LC 2 Develop Effective Communication and Reporting Skills	LO 2.1 Our students will demonstrate the ability to interpret and communicate analytical results
	LO 2.2 Our students will demonstrate the ability to write clear and concise reports based on relevant information
LC 3 Interact Effectively in Teams	LO 3.1 Our students will demonstrate the ability to understand and use team building behaviors to accomplish group tasks

## Course Website

Please go to [CANVAS](#). The Canvas site is where most course materials are posted. Make sure you have an NJIT UCID and password to access Canvas. Canvas will be used to post announcements and supplemental materials throughout the semester. Please check the site ([canvas.njit.edu](https://canvas.njit.edu)) frequently and contact the helpdesk (973-596-2900) for problems associated with Canvas.

## Course Deliverables/ Final Grade Components

Your grade for this course will be based on the following components:

<b>Grading:</b>		<b>Weight</b>
Tests	3 Tests (15% each)	30%
Projects	2 Projects (15% and 20%)	35%
Assignments	2 Assignments (10% and 15%)	25%
Attendance		10%
<b>Sum</b>		<b>100%</b>

## Tests:

Three (3) tests will be given during the semester. Note that the tests are NOT cumulative. Students are allowed to pick two (2) out of three tests with highest scores for grading, and each selected test weighs 15% of final grade (total 30% for tests).

The tests may consist of multiple-choice questions, true/false questions, short answer questions, and excel modeling questions which incorporate all materials covered in lectures and lab exercises.

**There will be no makeup test, nor extra work for extra credit.** So please make all your effort to attend the scheduled tests. Your final grade is not subject to negotiation.

**Individual Project:**

The individual project will be discussed in class. It is *NOT* a group project! The project is to be submitted by each student by the designated date, including data output and formulas. **Late projects will be penalized at a rate of 5% per calendar day.** In addition, once the deadline has passed, no further feedback will be given. Students submitting spreadsheets that are not unique will receive **a zero grade** for the project. You may discuss projects with your classmates, but the work you turn in **must be your own.**

**Group Assignments:**

Each group contains 4-5 students. Two (2) group assignments will be given during the semester, and the Assignment 1 and 2 weigh 10% and 15% of final grade, respectively. Group assignments are sub-sections of the Final Group Project. Assignment scope, requirement, and more details will be discussed in class and can be found in the project documents on Canvas. **Late assignments will be penalized at a rate of 5% per calendar day.**

**Final Group Project:**

Project scope, data, deadline, requirement, and more details will be discussed in class and can be found in the project documents on Canvas. **Late projects will be penalized at a rate of 5% per calendar day.**

**Attendance/Class Participation:**

As you must attend class to participate, attendance will be taken in every class (10% of your final grade). Like others, class attendance is very important in this course because learning occurs through interaction. You are allowed to miss a maximum of FIVE (5) classes throughout the semester without losing any attendance grades. Please note that I have a “no excuses” policy regarding absences — I trust you to use your own judgment about your reasons for missing classes and whether you can afford to do so. I will deduct **0.5 point** for every absence beyond 5 missed classes. Use these “free” absences as you like (job interview, personal matters, religious holidays, etc.). **You may choose any day for a free absence except a day when there is an evaluation activity (e.g., exams).** However, if you are absent or have missed any part of the class, it is YOUR responsibility to obtain the missed information from the instructor or other students.

It is important that you arrive on time so that we can start class promptly. Arriving late to class is very disruptive and discourteous to the class.

**Final Grades**

Grades reflect the level of understanding of course content. Therefore, **to achieve the grade of A or B in this class expect to:**

- Be prepared. This means actively participating in discussions, exercises, and activities to further understanding.
- Turn in all course deliverables in a timely and professional manner.

Insufficient preparation and participation will result in a grade of C or lower.

**Final course grades will be based on the following scale (there will be NO curve):**  
**Grading Scale**

A	B+	B	C+	C	D	F
90%	85%	80%	75%	70%	60%	<60%

**Email Etiquette**

This is a business course, and the expectation is that you will conform to appropriate business letter writing practice in all of your emails. The following are the basics.

- Put the course name (e.g., course name or course number) in the subject line
- Identify the subject of the e-mail with a brief but descriptive summary of the topic: include a proper salutation and the assignment details such as the title, homework, or test.
- Proofread your e-mail for proper sentence structure, capitalization, spelling and punctuation.
- Conclude the e-mail message with a proper closing (e.g. Regards, Sincerely) and your full name.

(Note: Do not e-mail requests for additional grade points unless there is an error in the grading. Please note that any grade discrepancies must be addressed within 2 weeks of the assignment due date.)

**Academic Integrity**

Learning is both an individual and a cooperative experience. Asking for and giving help freely in appropriate settings helps you learn. However, you should present only **YOUR** work as your own. University rules and standards define and prohibit “academic misconduct” by all members of the academic community including students. You are asked and expected to be familiar with these standards and abide by them.

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: <http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at [dos@njit.edu](mailto:dos@njit.edu).

## Accommodations

Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. If you are in need of accommodations due to a disability, please contact Scott Janz ([oars@njit.edu](mailto:oars@njit.edu)), Associate Director of the Office of Accessibility Resources & Services (OARS), Kupfrian Hall 201, to discuss your specific needs. A Letter of Accommodation Eligibility from the OARS authorizing your accommodations will be required. Accommodations need to be requested in advance and will not be granted retroactively.

## Classroom Policies

Professional and personal circumstances that preclude you from performing at satisfactory levels will not be considered in the determination of the course grade. The effect of your grade on overall GPA, eligibility for graduation, loss of scholarship, loss of a United States resident card, placement on academic probation, etc., are **NOT** considered in the determination of your grade. **There are no extra credit assignments. Individual requests for alternative ways to improve your course grade will not be considered.**

Incompletes will be given only to students who cannot finish the course on time due to major reasons outside of their control (e.g., illness, family tragedy, military service). Students must contact the [Dean of Students' office](#) to determine and verify that the reasons for not doing the work on time are valid.

## Computer/Webcam/Software Requirement and Access to the Internet

NJIT requires all students to have access to a computer with a webcam and a microphone at their place of residence. Details as to this requirement may be found on the college's website on the page describing NJIT's [Undergraduate Student Computer Requirement](#).

### Microsoft Excel

Available as part of Microsoft Office 2013, or 2016 (Windows OS);  
Office: Mac 2011 or 2016 (Mac OS);  
Free download at <http://ist.njit.edu/software/download.php>.  
Please be aware of the differences among versions in features and layout.  
We shall only use Excel 2013 for Windows OS. If needed, please take the advantage of on-campus computers.

### LockDown Browser

Please download and install LockDown Browser from the following link:  
<https://download.respondus.com/lockdown/download.php?id=264548414>  
LockDown Browser is required to take the exams properly from Canvas.  
Canvas further needs to access your webcam to proctor the exams. Please make sure you are comfortable with Canvas-LockDown Browser prior to the exam to ensure a smooth exam experience.

Access to the stable Internet is required for this course. NJIT provides on campus access to the Internet to all students. Details as how to access the Internet as well as other resources at NJIT may be found in the [Student Quick Start Guide](#).

### **Some Weblinks for Reference**

- [Bloomberg](#)
- [Investopedia](#)
- [Statista](#)
- [US Government](#)
- [Yahoo Finance](#)
- [NJIT Canvas - Student Orientation](#)

### **Final Comments**

**I reserve the right to change any aspect of this syllabus or the course schedule at any time**, as the need arises. Students registered for this course assume full responsibility for reading and understanding the course policies as stated above.

**Tentative Schedule**  
(Deviations may be necessary)

Date	Topics	Content	Note
1/17	Course Introduction	Syllabus	
1/22, 1/24	Analysis of Financial Statement	Lecture/Lab 1	1/22 Last Day to Add/Drop
1/29, 1/31	Capital Budgeting	Lecture/Lab 2.1	
2/5, 2/7	NPV/IRR/Annuity	Lecture/Lab 2.2	
2/12, 2/14	Test 1 Review, Q&A Group Assignment Discussion		
2/19	Test 1	Module 1&2	No Makeup
2/21, 2/26	Risk & Capital Budgeting	Lecture/Lab 3.1	
2/28, 3/4	Scenario/Sensitivity/Breakeven Analysis	Lecture/Lab 3.2	Group Assignment 1 Due 2/29
3/6	Individual Project Discussion	Project 1	
3/18	Bond Valuation	Lecture/Lab 4.1	
3/20, 3/25	Bond Valuation	Lecture/Lab 4.2	Individual Project Due 3/20
3/27, 4/1	Test 2 Review, Q&A Group Assignment Discussion		4/1 Last Day to Withdraw
4/3	Test 2	Module 3&4	No Makeup
4/8	Risk & Return	Lecture/Lab 5	
4/10	Stock Valuation	Lecture/Lab 5	Group Assignment 2 Due 4/10
4/15, 4/17	Portfolio Management	Lecture/Lab 6	
4/22, 4/24	Test 3 Review, Q&A Group Project Discussion		
4/29	Test 3	Module 5&6	No Makeup
TBD	Q&A		Group Project Due 4/30 5/11 Final grades due