

Asset and Liability Management

COURSE NO: FRE-GY 6991

Instructor Information

- Nabil Zaki- Adjunct Professor- Tandon School- NYU
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- 1-732-688-6887
- Instructor office hours: 9-5
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Course Information

- [Course number and section
- Course Title: **Asset & Liability Management**
- Course Number: FRE-GY 6991
- Co-requisite or prerequisite, if any: Accounting- Finance- Math background
- Face-to-face class meeting days and times: 7 sessions
- Class room number and building: 6 Metrotech, Brooklyn NY
- Virtual (online) meeting days and times, if any] NO Virtual

Course Overview and Goals

Upon completion of this course, students will be able to:

- Understand the traditional as well as the ever-changing landscape of asset-liability management
- Manage interest rate income at risk in banking books.
- Comprehend the ALM process and how it integrates with the overall strategy of the bank or the corporation.
- Provide a balance between strategic perspectives and analytical/technical concepts in ALM.
- Learn how to achieve optimal balance sheet performance
- Evaluate the latest risk analysis techniques for enhanced asset/liability management
- Understand how to achieve effective capital allocation for enhanced asset/liability management.
- Provide the participants with a thorough knowledge on the application of derivative instruments to optimize balance sheet performance
- Learn about effective liquidity management and regulations
- Analyze a value-at-risk approach to asset/liability management for effective risk control.
- Clarify the problem of credit risk as it relates to interest rate and liquidity risks.
- Understand the dynamics of gap analysis and the various products affecting it.
- Ascertain the pros and cons of various simulation techniques
- Learn how to improve portfolio profitability through the use of securitization.
- Understand regulatory capital & Basel II as well as liquidity risk parameters (Basel III)

Course Requirements

Class Participation

A must

Assignments

A number of assignments; including concepts & quantitative exercises

Tests & Quizzes

Regularly

Assigned Readings

Material + two books

Grading of Assignments

The grade for this course will be determined according to the following formula:

Assignments/Activities	% of Final Grade
[Example: Class participation]	[25%]
[Example: Quiz]	[25%]
A number of exercises 10	[40%]
[Example: Test]	[10%]

<Create a simple structure for your table so that it can be easily read. Avoid blank rows, columns, & merged cells.>

Letter Grades

Letter grades for the entire course will be assigned as follows:

F	0
C	70
C+	76.67
B-	80
B	83.33
A-	90
A	93.33

This grading has been created by Prof. Blecherman for MSFE.

View Grades

[Insert how grades are available to students]

Course Schedule

Topics and Assignments

Week/ Date	Topic	Reading	Assignment Due
[Week 1, insert date]	Overview of Asset/Liability Management <ul style="list-style-type: none"> • Concepts & Definition • Evolution of ALM • Risk/Reward Profile • Funding Transfer Pricing • ALCO Composition & Objectives • Modern ALM Philosophy • Structure and dynamics of Balance Sheet Gap Analysis <ul style="list-style-type: none"> • Concept & Overview • Maturity Mismatch Risk • Positive vs. Negative Duration Gap • Dynamics of liquidity gaps 	Readings on S&L Crisis	Preparation of Presentation
[Week 2, insert date]	Interest Rate Risk- Overview & Measurement <ul style="list-style-type: none"> • Modeling interest rate risk • Deterministic vs. Stochastic models • Arbitrage models • Equilibrium models • Types of Interest Rate Risks • Yield Curve Risk • Basis Risk • Macaulay Duration • Modified Duration • Core Elements of Duration • Convexity Concept • Duration gap of Equity • Earnings versus Shareholder Value • Effective Duration • Effective Convexity • Hedging Duration & Convexity • Concept of Negative Duration • Key Rate Duration • Math of Sensitivity Parameters 	[Insert reading]	CASE STUDY: Hypothetical numerical cases on assessing & quantifying the sensitivity of the bank's financial transactions on its cash flows & NII

[Week 3, insert date]	Measuring Risk Techniques <ul style="list-style-type: none"> • Sensitivity Parameters • Simulation Methodologies • Rate Shocks • Simple Simulation • Historical Simulation • Monte Carlo Simulation • Transfer Pricing as a Tool • Value-at-Risk • Core Elements of VAR • VaR Greeks & Math • Correlation & Covariance • VaR Methodologies • Implementation of VaR 	[Insert reading]	CASE STUDY: Hypothetical numerical cases on assessing & quantifying the sensitivity of bonds & other option-embedded fixed-income securities to different parallel & un-parallel changes & twists in the yield curve.
[Week 4, insert date]	Interest Rate Management Techniques <ul style="list-style-type: none"> • Interest Rate Derivatives • Interest Rate Swaps • Generic versus complex structures of Swaps • Interest Rate Options • Interest Rate Futures • Forward-Rate Agreements • Interest Rate Caps/Floors/Collars • Swaptions • Applications • Pricing & Valuation • Gap Analysis • MGA & DGA • Duration Gap 	[Insert reading]	[Insert assignment]
[Week 5, insert date]	Liquidity Risk & Management <ul style="list-style-type: none"> • Liquidity Concepts • Bank Liquidity Risk • Concept & Definition • Types of Liquidity Risks • The Role of Confidence • Liquidity & Activity Ratios 	[Insert reading]	[Insert assignment]



	<ul style="list-style-type: none"> • Leverage & Default Issues • Contingency Planning <p>Measuring Bank Liquidity</p> <ul style="list-style-type: none"> • The Cash-Flow Approach • Large Liability Dependence • Core Deposits To Assets • Loans & Leases to Assets • Loans & Leases to Core Deposits • Temporary Investments to Assets • Brokered Deposits to Total Deposits • Market-to-Book Value • Liquidity Ladder • Stochastic Liquidity Gaps 		
[Week 6, insert date]	<ul style="list-style-type: none"> • The Formation of Expectations • Liquidity Planning • Faces of Liability Management <ul style="list-style-type: none"> ➤ Minimizing Deposit Interest Costs ➤ Customer Relationships ➤ Circumventive Regulatory Restrictions <ul style="list-style-type: none"> ✓ Deposit Rate Ceilings ✓ Reserve Requirements ✓ Pricing & Methods of Deposit Insurance <p>Basel III & Effective Risk Governance</p> <ul style="list-style-type: none"> ● Defining & quantifying risk appetite ● Establishing risk limits ● Liquidity contingency planning ● Basel 3 & Liquidity risk <ul style="list-style-type: none"> ✓ Basel 3 Dimensions 	[Insert reading]	[Insert assignment]
[Week 7, insert date]	<p>A full Live CASE STUDY</p> <p>A real Balance Sheet; requiring students to measure gap risk and the various ways of hedging the balance sheet negative or positive duration gap</p>	[Insert reading]	[Insert assignment]

columns, & merged cells.>

Tests and Quizzes

- A wide gamut of tests, numerical examples, cases studies and quizzes

Course Materials: provided by myself

Required Textbooks & Materials

- Asset and Liability Management- GARP Courses
- The Handbook of Asset/Liability Management: State-of-the-Art Investment Strategies,
Risk Controls and Regulatory Requirements- Frank Fabozzi

Resources

- **Access your course materials:** [NYU Brightspace](#)
- **Databases, journal articles, and more:** [Bern Dibner Library](#) (library.nyu.edu)
[NYU Virtual Business Library](#) (guides.nyu.edu/vbl)
- **Obtain 24/7 technology assistance:** Tandon IT Help Desk (soehelpdesk@nyu.edu, 646.997.3123)
NYU IT Service Desk (AskIT@nyu.edu, 212-998-3333)

Policies

Academic Misconduct

- A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.
- B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic

work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
2. Fabrication: including but not limited to, falsifying experimental data and/or citations.
3. Plagiarism: Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.
4. Unauthorized collaboration: working together on work that was meant to be done individually.
5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission have been received from the course instructor(s) or research adviser involved.
6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

Disability Disclosure Statement

Academic accommodations are available for students with disabilities. Please contact the **Moses Center for Students with Disabilities** (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

Inclusion Statement

The NYU Tandon School values an inclusive and equitable environment for all our students. I hope to foster a sense of community in this class and consider it a place where individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations, and abilities will be treated with respect. It is my intent that all students' learning needs be addressed both in and out of class and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. If this standard is not being upheld, please feel free to speak with me.

Using Generative AI

Please refer to the [Adapting Assignments to Generative AI](#) page to craft a statement that is either *Integrating*, *Avoiding*, or *Forbidding*.