

Quantitative Finance
Course Number: 22:839:695
Course Title: Indexing and ETFs

COURSE DESCRIPTION

This is an advanced, modern finance course with the objective of studying indices and Exchange Traded Funds (ETFs) and their application in investment management. The course is divided into two major segments. The first provides a comprehensive overview of the theories and practical experience that are the foundations for indexing. This includes a review of Modern Portfolio Theory (MPT) and its influence on the evolution and role of indexing in investment management, a deep dive into best practices in index (portfolio) construction necessary to fully understanding ETFs, and a thorough overview of the latest in index products across all asset classes. The second segment provides a thorough examination of ETFs, including their anatomy, mechanics, application in investment strategy, and eco-system of industry participants.

The course is designed to be comprehensive covering the topics of Indexing and ETFs, while being contemporary and practical with the content, along with, providing access to resources and industry participants. Class time will include lectures using PowerPoint Presentations and periodic appearances of guest speakers from across the Financial Services industry. Students will gain useful knowledge about the important methodology considerations amongst providers, the many applications for indexes (covering all asset classes), the benefits of ETFs in investment management. They will also understand how to navigate the eco-system of industry participants and job opportunities to pursue and advance their careers.

COURSE MATERIALS

- Canvas and email will be used
- No textbook is required; however, recommended books include:
 - Markowitz, Harry M., Portfolio Selection: *Efficient Diversification of Investments*, Edition 2. John Wiley & Sons, Inc., 1991
 - Malkiel, Burton, “A *Random Walk Down Wall Street*, 8th ed New York: W.W. Norton, 2003
 - Rasmussen, M., *Quantitative Portfolio Optimisation, Asset Allocation and Risk*

Management, 2003 o Hill, Joanne M; Nadig, Dave; Hougan, Matt; A
Comprehensive Guide to Exchange-Traded Funds (ETFs), 2015 (CFA Bookstore,
or online at <http://www.cfapubs.org/toc/rf/2015/3>)

- White Papers and Articles will be suggested throughout the course as appropriate
- Use of various specific websites will be suggested strongly and include:
 - www.bloombergindices.com (website for Bloomberg (former Barclays) Indices)
 - www.barra.com (reference for “value” and “growth” indexes)
 - www.bloomberg.com (financial news and information)
 - www.bondmarkets.com (information on fixed income securities)
 - www.efficientfrontier.com (the online journal)
 - www.etf.com (source for ETF data and research)
 - www.etfdb.com (source for ETF news, data and strategies)
 - www.etfstategy.com (website for ETF news and research)
 - www.ftserussell.com (website for FTSE Russell Indices)
 - www.finra.org (Financial Industry Regulatory Authority)
 - www.ici.org (mutual fund facts and figures)
 - www.ihsmarket.com (Fixed income indices and market data)
 - www.ishares.com (website for BlackRock iShares ETFs)
 - www.marketwatch.com (source for financial news and information)
 - www.moneychimp.com (review modern portfolio theory)
 - www.morningstar.com (comprehensive source of investment information)
 - www.msci.com/products/indexes (MSCI Indexes)
 - www.nasdaq.com (website for the NASDAQ)
 - www.nyse.nyx.com (NYSE Euronext)
 - www.powershares.com (leading provider of “intelligent” ETFs)
 - www.proshares.com (website for Alternatives ETF provider)
 - www.seekingalpha.com (stock market news and financial analysis)
 - www.spcdrs.com (website for State Street Global Advisors ETFs SPDRS)
 - www.standardandpoors.com (website for S&P 500)
 - www.stoxx.com (website for STOXX Indices)
 - www.us.spindices.com (website for S&P Dow Jones Indexes)
 - www.vanguard.com (website for Vanguard ETFs and Index Funds)
 - www.vaneck.com (global ETF provider)
 - www.wilshire.com/indexes (website for Wilshire Indexes)
 - www.wisdomtree.com (website for WisdomTree ETFs)
 - www.wsj.com (daily financial and economic news)
 - www.xtf.com (comprehensive data on ETFs and Indexes)

LEARNING GOALS AND OBJECTIVES

Students completing this course should be able to:

- A. Understand the basics of portfolio construction/optimization
 - B. Understand the origins and role of indexing in investment management
 - C. Understand market-capitalization weighted and alternatively weighted indices
 - D. Discuss the multiple dimensions of indexing
 - E. Understand Best Practices and Challenges in Index Construction
 - F. Understand implications in passive versus active management
 - G. Understand the evolution and progression of Exchange Traded Funds (ETFs)
 - H. Understand the mechanics of ETFs in Primary and Secondary Markets
 - I. Understand the objectives, construction, maintenance of ETF portfolios
 - J. Understand and discuss the benefits of ETF use
 - K. Analyze ETFs in the context of investment strategy
 - L. Understand data and information used by Index Providers, ETF Sponsors and their clients
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PREREQUISITES

To best take advantage of this class students should have a good understanding of statistics, macroeconomics, and finance including a basic understanding of capital markets and portfolio analysis.

ACADEMIC INTEGRITY

I do NOT tolerate cheating. Students are responsible for understanding the RU Academic Integrity Policy <http://academicintegrity.rutgers.edu/>

I will strongly enforce this Policy and pursue *all* violations. On all examinations and assignments, students must sign the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment.” I will screen all written assignments through *SafeAssign* or *Turnitin*, plagiarism detection services that compare the work against a large database of past work. Don’t let cheating destroy your hard-earned opportunity to learn. See business.rutgers.edu/ai for more details.

COURSE CONTENT

- A. Course Foundation – Genesis of Indexing
 - 1) Summary of the Evolution of Optimal Portfolio Construction and Maximization Techniques
 - 2) Review of Investment Risk
 - 3) Overview of Beta/Alpha in Investment Management

- B. Indexing
 - 1) Methodology of Index Construction
 - 2) Evolution Of Popular Indices
 - 3) Multiple Dimensions of Indexing
 - C. Details about Asset Class Indexes (focus on equity)
 - D. Overview of Alternatives to Market-cap Weighting
 - E. Smart Beta Strategy and Factor Indexes
 - F. Understand the implications of indices in passive and active management
 - 1) Overview of benchmarks versus tradable indices
 - 2) Overview of index funds and derivatives
 - 3) Industry Trends
 - G. Overview on the evolution of Exchange Traded Funds (ETFs)
 - H. Details on the mechanics of ETFs in Primary and Secondary Markets
 - 1) ETFs as an investment vehicle
 - 2) The mechanics of ETFs and the Eco-system of participants
 - 3) Pricing ETFs
 - 4) Real costs involved
 - I. Understand and discuss the benefits of ETFs
 - 1) Review the compelling features
 - 2) Examples of benefits to different users/investors
 - J. Industry
 - 1) Review the scope, participants and products
 - 2) Introduce next generation structure
 - K. Analyze ETFs in the context of investment strategy
 - 1) Passive, Active, Blended
 - 2) Smart Beta
 - L. Access data and information about ETFs
 - 1) Overview of popular sources for ETF data, news and information
 - 2) Examples of industry participants
 - M. Industry Trends
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METHOD OF INSTRUCTION

- A. Lectures (notes will be made available the day after each class)
 - B. Periodic homework assignments involving both required and suggested reading (will be communicated in class and via Canvas)
 - C. Semester Team Project
 - D. Guest Speakers
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CLASSROOM CONDUCT

Students are expected to behave with respect for instructor, classmates and guests. This includes hand-raising for questions and comments, silencing cell phones and laptops, and not engaging inside conversations during the lecture.

METHOD OF EVALUATION

- A. There will be no intended grade distribution.
 - B. Two quizzes/exams, three homework assignments, and a final project will account for 95% of final grade
 - 1) Quizzes, will include multiple choice questions, will account for **50%**
 - 2) Homework will account for **15%**
 - 3) The semester project, that will account for **30%** of the semester grade, will be explained at the end of Class #2 and must be approved by Class #6 date and submitted/presented by ()
 - C. Class participation will be judged by instructor and count for **5%** of final grade
 - 1) Attendance will be recognized (if campus is open class will be held) 2) Discussion (questions and answers) will be noted
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BIBLIOGRAPHY

Abner, David J., *The ETF Handbook*. John Wiley & Sons, Inc. (2010)

Bernstein, Peter L., *Capital Ideas Evolving*. John Wiley & Sons, Inc., (2007)

- Beebower, Gilbert L., Gary P. Brinson, and L. Randolph Hood. "Determinants of Portfolio Performance." *Financial Analysts Journal* (1986)
- Elton, Edwin J., Martin J. Gruber, Stephen J. Brown, William N. Goetzmann. *Modern Portfolio Theory & Investment Analysis*. Wiley Finance. 9th edition.
- Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work." *Journal of Finance* (1970)
- Ferri, Richard, *The Power of Passive Investing*. New York: John Wiley & Sons, 2011
- Ferri, Richard, *The ETF Book: All You Need to Know About Exchange-Traded Funds*. New York: John Wiley & Sons, 2009
- The Financial Times
- Gastineau, Gary L., *The Exchange-Traded Funds Manual*. New York: John Wiley & Sons (2002)
- Malkiel, Burton, "A Random Walk Down Wall Street, 8th ed New York: W.W. Norton, 2003
- Malkiel, Burton, "The Efficient Market Hypothesis and Its Critics," *Journal of Economic Perspectives* 17, no. 1 (October 2003)
- Markowitz, Harry M., Portfolio Selection: *Efficient Diversification of Investments*, Edition 2, John Wiley & Sons, Inc., 1991
- Rasmussen, M., *Quantitative Portfolio Optimisation, Asset Allocation and Risk Management*, Palgrave Macmillan; 2003 edition (December 13, 2002)
- Samuelson, Paul A., "The Judgment of Economic Science on Rational Portfolio Management: Indexing, Timing, and Long-Horizon Effects." *Journal of Portfolio Management* (fall 1989)
- Schoenfeld, Steven A., *Active Index Investing*. John Wiley & Sons, Inc. (2004)
- Sharpe, William F, "The Arithmetic of Active Management" *Financial Analysts Journal* (January/February 1991)
- Siegel, Jeremy J., *Stocks for the Long Run*. 3rd Edition, McGraw-Hill (2002)
- Stevens, Dale H., Ronald J. Surz, and Mark E Wimer. "The Importance of Investment Policy." *Journal of Investing*, vol.8, no. 4 (Winter 1999)
- The Wall Street Journal

SUPPORT SERVICES

If you need accommodation for a *disability*, obtain a Letter of Accommodation from the Office of Disability Services. The Office of Disability Services at Rutgers, The State University of New Jersey, provides student-centered and student-inclusive programming in compliance with the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments of 2008, Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1998, and the New Jersey Law Against Discrimination. More information can be found at ods.rutgers.edu.

[Rutgers University-New Brunswick ODS phone (848)445-6800 or email dsoffice@echo.rutgers.edu]

[Rutgers University-Newark ODS phone (973)353-5375 or email ods@newark.rutgers.edu]

If you are *pregnant*, the Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy.

[Rutgers University-New Brunswick Title IX Coordinator phone (848)932-8200 or email jackie.moran@rutgers.edu]

[Rutgers University-Newark Office of Title IX and ADA Compliance phone (973)353-1906 or email TitleIX@newark.rutgers.edu]

If you seek *religious accommodations*, the Office of the Dean of Students is available to verify absences for religious observance, as needed.

[Rutgers University-New Brunswick Dean of Students phone (848)932-2300 or email deanofstudents@echo.rutgers.edu]

[Rutgers University-Newark Dean of Students phone (973)353-5063 or email DeanofStudents@newark.rutgers.edu]

If you have experienced any form of *gender or sex-based discrimination or harassment*, including sexual assault, sexual harassment, relationship violence, or stalking, the Office for Violence Prevention and Victim Assistance provides help and support. More information can be found at <http://vpva.rutgers.edu>.

[Rutgers University-New Brunswick incident report link: <http://studentconduct.rutgers.edu/concern/>. You may contact the Office for Violence Prevention and Victim Assistance at (848)932-1181]

[Rutgers University-Newark incident report link: https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=7. You may also contact the Office of Title IX and ADA Compliance at (973)353-1906 or email at TitleIX@newark.rutgers.edu. If you wish

to speak with a staff member who is confidential and does **not** have a reporting responsibility, you may contact the Office for Violence Prevention and Victim Assistance at (973)353-1918 or email run.vpva@rutgers.edu]

If students who have experienced a temporary condition or injury that is adversely affecting their ability to fully participate, you should submit a request via <https://temporaryconditions.rutgers.edu>.

If you are a military *veteran* or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. <http://veterans.rutgers.edu/>

If you are in need of *mental health* services, please use our readily available services.

[Rutgers University-Newark Counseling Center: <http://counseling.newark.rutgers.edu/>]

[Rutgers Counseling and Psychological Services–New Brunswick: <http://rhscaps.rutgers.edu/>]

If you are in need of *physical health* services, please use our readily available services.

[Rutgers Health Services – Newark: <http://health.newark.rutgers.edu/>]

[Rutgers Health Services – New Brunswick: <http://health.rutgers.edu/>]

If you are in need of *legal* services, please use our readily available services: <http://rusls.rutgers.edu/>

Students experiencing difficulty in courses due to *English as a second language (ESL)* should contact the Program in American Language Studies for supports.

[Rutgers–Newark: PALS@newark.rutgers.edu]

[Rutgers–New Brunswick: eslpals@english.rutgers.edu]

If you are in need of additional *academic assistance*, please use our readily available services.

[Rutgers University-Newark Learning Center: <http://www.ncas.rutgers.edu/rlc>

[Rutgers University-Newark Writing Center: <http://www.ncas.rutgers.edu/writingcenter>]

[Rutgers University-New Brunswick Learning Center: <https://rlc.rutgers.edu/>]

[Optional items that many faculty include:

- Students must sign, date, and return a statement declaring that they understand the RU Academic Integrity Policy.

- Students must sign, date, and return a statement declaring that they understand this syllabus.]