FINANCIAL ANALYTICS
23MBPE694

(COURSE HANDBOOK)

MBA

COURSE HEAD:
Assistant Professor Ramya Bharadwaj B S

1. GENERAL INFORMATION

Welcome to the course on "Financial Analytics"!

As financial markets evolve rapidly and become more data-driven, the ability to interpret and analyze financial data has become an essential skill for professionals in this field. This course is designed to introduce students to the fundamentals of financial data analytics, equipping them with the necessary tools and techniques to evaluate corporate performance, model financial volatility, assess credit risk, and construct optimal investment portfolios. Through a combination of theoretical concepts and practical applications, students will gain a deep understanding of how data influences decision-making in the financial world.

The course covers several core areas, including financial time series analysis, portfolio management, and financial statement analysis. Students will explore how asset returns behave over time and learn to model volatility using methods such as ARCH and GARCH. Additionally, the course provides insight into the construction of optimal portfolios based on Markowitz's portfolio theory, which aims to balance risk and return. With a focus on both theory and hands-on application, the course emphasizes the practical aspects of financial analytics, preparing students to tackle real-world financial challenges and make data-driven investment decisions.

Furthermore, the course delves into the critical area of credit risk modelling, a vital skill for understanding corporate liabilities and default risk. Students will examine different approaches for modelling credit risk, including intensity modelling and rating-based term structure models. By the end of the course, students will be able to apply financial analytics concepts to assess corporate performance, evaluate risks, and optimize investment strategies. This holistic approach not only enriches students' understanding of financial analytics but also equips them with the skills needed for a successful career in finance.

1.1.Course Objectives

- **Basic Financial Data Analytics:** Impart knowledge on basics of financial data analytics
- **Portfolio Analysis:** Acquaint students to performing portfolio analysis to create optimal portfolio construction.
- **Credit Risk Modelling:** Provide insights into modelling credit risk evaluating corporate liabilities and defaulting risk.
- **Financial Statement Analysis:** Familiarize with financial statement analysis to analyse asset returns and volatility.

1.2.Course Outcomes

- **CO1:** Summarize the basic concepts financial data analytics.
- **CO2:** Apply time series and financial statement analysis to draw inferences on corporate performance.
- **CO3:** Apply models for assessing financial volatility and evaluate credit risk
- **CO4:** Apply portfolio theory to construct optimal portfolios.

1.3.Set Text and Suggested Sources

All the below mentioned books are available in the 1st Floor Library.

Key Text Books:

1. Damodar N Gujarati, Dawn Porter, Sangeetha Gunashekar. "Basic Econometrics".5th Edition, McGraw Hill, 2017.
2. Oliver Linton, "Financial Econometrics" 1st Edition, Cambridge University Press, 2019.

Reference Books:

- Chris Brooks "Introductory Econometrics for Finance", 4th edition, Cambridge University Press,2019.
- Pitabas Mohanty "Spreadsheet skills for Finance Professionals", 2nd Edition, Taxmann's, 2020.

Important Web links:

1. Financial Analytics e book
   https://open.umn.edu/opentextbooks/tex1
2. Financial Statement Analysis
   https://www.pdfdrive.com/financial-statement-analysis-books.html
3. Credit Risk Analysis
   https://cbben.thomsonreuters.com/sites/default/files/net_file_store/Vol_1_CM_July_2020.pdf

1.4.Self-Study Course

In this course, students can enrol for the course "Financial Data Analytics & Machine Learning" offered by National Stock Exchange (NSE), which would be a value addition to their resume after 4th Semester.

Note: The above link directly leads to the courses to be undertaken by the students. Please register using the same links or stay logged in to be able to access the courses.

2. THE COURSE

2.1.Course Description

FINANCIAL ANALYTICS			
Semester	**IV**	CIE Marks	**50**
Course Code	**23MBPE694**	SEE Marks	**50**
Teaching Hours/Week (L:T:P)	**4:0:0**	Exam Hrs	**03**
Total Hours	**52**	Credits	**04**

The Financial Analytics course designed to provide students with foundational knowledge in data analytics and its implementation in financial data analysis. The course will run for 13 weeks during Semester 4 and consists of 5 modules that cover essential topics in financial data analytics. Each week includes 4 lectures, delivered by Professor of practice, focusing on theoretical concepts, practical applications, and course-related activities. Spanning a total of 52 hours, this 4-credit course is assessed through Continuous Internal Evaluation (CIE) for 50 marks and a Semester-End Examination (SEE) for 50 marks, with 3-hour exam duration. This structure ensures a balanced and engaging learning experience for students.

2.2.Initiating Contact with Staff and Other Students

We encourage open communication and value your inquiries about the Course. However, given the large number of students in this course, we encourage that you use email and office hours of the faculty or any other forms of correspondence thoughtfully. Before reaching out with administrative questions, please check if your query has already been addressed in previous communications or in the materials provided in this handbook and on our website. Additionally, we encourage you to engage with your peers for discussions and collaborative learning, as this will enhance your understanding of the course material and foster a supportive academic community.

2.3.Resources

Resources include digital libraries, e-learning platforms, and research databases, providing students with anytime, anywhere access to academic materials and interactive courses.

Students can access various resources on the college website, including the VTU Consortium, NPTEL, and NDLI, offering e-books, research papers, and video lectures for flexible learning.

To access digital library and e-learning tools, Visit https://mite.ac.in/ (Campus Life > Library > VTU Consortium/e-learning platforms/additional sources).

2.4.Staff

Course Convenor: Ramya Bharadwaj B S
Cabin: 3rd Floor, PG Block
Email: ramya@mite.ac.in

2.5.Topics and Reading materials for each module

Module 1 *No. of Hours: 10*

- **Topic: Essentials of Financial Analytics**
  - Includes Relevance, scope, recenttrends. Financial
  - Time Series: Characteristics, asset returns, distributional properties of return
  - Review of statistical distributions, properties of financial times.

- **Essential Readings:**
  - Oliver Linton, "Financial Econometrics" 1st Edition, Cambridge University Press, 2019, Chapter 1,2 and 3.

- **Additional Reading:**
  - Chris Brooks "Introductory Econometrics for Finance", 4th edition, Cambridge University Press,2019, Chapter 1.

Module 2 *No. of Hours: 12*

- **Topic: Financial Statement Analysis**
  - Analysis of Balance Sheet, Income Statement, Cash Flow Statement, Understanding the Financial Statements.
  - Interlinking Financial Ratios and Ratio Analysis.
- **Activities:**
  - Students will work in groups to come up with a presentation on Analysing financial statements through tools like Excel, PoweBI etc.

- **Essential Reading:**
  - Pitabas Mohanty "Spreadsheet skills for Finance Professionals", 2nd Edition, Taxmann's, 2020, Chapter1 and 2.
- **Video Resource:**
  - Financial Statements with Power BI:
    - https://www.youtube.com/watch?v=mTa34gtJhYA

Module 3 *No. of Hours: 10*

- **Topic: Modelling Volatility and Risk**
  - Volatility: Characteristics, Modelling volatility
  - ARCH/GARCH Models
  - Application of Value at risk
- **Activities:**
  - Students will form teams and will be assigned to research real-life financial crisis or major market events (e.g., the 2008 financial crisis or a market crash). They will then estimate the change in volatility before, during, and after these events.

- **Essential Reading:**
  - Oliver Linton, "Financial Econometrics" 1st Edition, Cambridge University Press, 2019, Chapter 11.
- **Video Resources:**
  - Time Varying Volatility and GARCH in Risk Management:
    - https://www.youtube.com/watch?v=ZQb8_NURCig
  - From Basics to Mastery: ARCH & GARCH Models in Financial Analysis:
    - https://www.youtube.com/watch?v=BWlsEQ2M2to

Module 4 *No. of Hours: 9*

- **Topic: Basic Portfolio Analysis**
  - Return and risk
  - Markowitz Portfolio Theory (two-assets and multi-assets portfolio)
  - Minimum variance portfolio and efficient frontier
  - Capital market line

- **Activities:**
  - In groups, students will be focusing on different portfolio types (e.g., high-risk, low-risk, diversified). They will analyse and present the pros and cons of different portfolio combinations and strategies for risk-averse and risk-seeking investors, using Excel and Power BI visualizations.
- **Essential Reading**:
  - Oliver Linton, "Financial Econometrics" 1st Edition, Cambridge University Press, 2019, Chapter7.

- **Additional Reading:**
  - "Capital Asset Pricing Model: A Review of Theory, Evidence and Applications", Rajib Mallik, International Journal of Economic Research,2017:
    - https://serialsjournals.com/abstract/84909_27.pdf
  - "The Global Minimum Variance Portfolio and Efficient Frontier Approach in Developed and Developing Economies: A Case Study of International Stock Markets", Frederico Beltrao Horta,2021.
    - https://norma.ncirl.ie/5485/1/fredericobeltraohorta.pdf

Module 5 *No. of Hours: 11*

- **Topic: Modelling Credit Risk**
  - Credit Risk and Modelling Credit Risk
  - Corporate liabilities as contingent claims, endogenous default boundaries and optional capital structure.
  - Intensity Modelling
- **Activities:**
  - Students will form teams to analyse financial data for a firm and evaluate the impact of different levels of debt on the company's value. They will use Excel; calculate the Weighted Average Cost of Capital (WACC) for different debt-equity ratios. They will also calculate the firm's levered value using the Modigliani-Miller Proposition.

- **Essential Reading:**
  - Oliver Linton, "Financial Econometrics" 1st Edition, Cambridge University Press, 2019, Chapter 13 and 14.

- **Additional Reading:**
  - "A dynamic credit risk assessment model with data mining techniques: evidence from Iranian banks", Saba Moradi & Farimah Mokhatab Rafiei,Springer Open,2019:
    - https://jfin-swufe.springeropen.com/articles/10.1186/s40854-019-0121-9
  - The Changing Landscape of Financial Credit Risk Models, Tanja Verster and Erika Fourie, Int. J. Financial Stud,2023:
    - https://www.mdpi.com/2227-7072/11/3/98

3. ASSESSMENT

The assessment for the Financial Analytics course is divided into two components: Continuous Internal Evaluation (CIE) and Semester End Examination (SEE), each accounting for 50% of the total marks.

Continuous Internal Evaluation (CIE) consists of two internal tests, scheduled for the 8th and 14th weeks, contributing a total of 30% to the overall marks. Students can earn the other 20% through assignments, which includes Financial Statement Analysis – 10 Marks and Portfolio Strategies – 10 Marks.

Semester End Examination (SEE) constitutes the remaining 50% of the total marks. Key information regarding examination dates and related details can be accessed via the college website (Academics and Courses section > Calendar of Events > PG Even Sem).

Rubrics for Other Assessment (Total: 20 Marks / 40% of CIE)

Both Presentations: **Financial Statement Analysis and Portfolio Strategies – 10 Marks Each**				
Usage of Tools	**Presentation**	**Subject Knowledge**	**Research**	**Q&A**
2 Marks	**2 Marks**	**2 Marks**	**2 Marks**	**2 Marks**