JINDAL GLOBAL BUSINESS SCHOOL
INDIA'S FIRST MULTI-DISCIPLINARY GLOBAL BUSINESS SCHOOL

O.P. Jindal Global University
A Private University Promoting Public Service
NAAC Accreditation - 'A' Grade

Jindal Global Business School
Course Outline

Course Title	Financial Analytics Using Python
Core or Elective	Elective
Program and Batch	MBA-2025, IBM-2022, IBM-2023
Semester & Academic Year	Fall 2026
Credits	1.5
Discipline/Area	Accounting and Finance
Name of the Faculty Member/Course Instructor	Dr. (Prof) Shivani Narayan
Contact Details of the Faculty Member	shivani.narayan@jgu.edu.in
Contact Details of Support Staff	jgbs-eo@jgu.edu.in
Faculty Member's Open Office Day/s & Time	Thursday, 3- 4 PM Friday 3-4PM

Introduction to the Course

Financial analytics plays a pivotal role in modern finance, aiding decision-making processes through data-driven insights and quantitative analysis. This course provides a comprehensive introduction to financial analytics using the Python programming language, equipping students with the skills necessary to navigate the complex landscape of financial data analysis.

Throughout this course, students will learn how to leverage the power of Python for various financial tasks, including data visualization, modeling, and interpretation. They will get hands on experience with real-world financial datasets, allowing them to understand financial statistics and data analysis.

Course Learning Objectives

At the end of the course, students should be able to

1. CLO1- Develop an understanding of financial analytics principles and techniques using Python.
2. CLO2- Gain proficiency in exploratory data analysis, modeling, and risk assessment in finance.
3. CLO3- Acquire practical skills in using Python for analyzing real-world data.

Programme Competency Goals

MBA Programme Competency Goals (PCGs)		MBA Programme Learning Objectives (PLOs)
		Students will be able to
1	**Technological Agility:** Ability to adopt relevant technologies for better business decision making.	1. Understand relevant business technologies
		2. Understand future technologies in business domain
2	**Responsible Global Citizenship:** Ability to understand the interplay between local and global issues and to act with sensitivity towards ethical and social issues	3. Understand the interplay between local and global business issues
		4. Demonstrate sensitivity towards ethical issues
		5. Demonstrate sensitivity towards social issues
		6. Address societal issues
3	**Effective communication:** Ability to effectively exchange ideas and information	7. Present their ideas with clarity
		8. Prepare an organized and logical business document
		9. Use technology for effective communication
4	**Critical Thinking:** Ability to identify, analyze business problems and propose effective solutions	10. Identify main issues of business problems
		11. Examine information from different sources
		12. Draw inferences from analysis
		13. Evaluate alt ernatives
		14. Summarize and conclude
5	**Leadership:** Ability to take initiative, inspire and collaborate with others	15. Take initiative
		16. Contribute effectively in groups

PLO-PCG Assessments Mapping Matrix

Program Learning Objectives (PLOs)	Program Competency Goals (PCGs)	Course Assessment Item
This course helps you to develop the following Program Learning Outcomes:	This course helps you to develop the following Program Competency Goals:	This learning outcome will be assessed in the following items
PLO 1- 2	PCG 1	A2, A3, A4
PLO 7, 9	PCG 3	A1, A4
PLO 11-14	PCG 4	A2, A3, A4

Evaluation Schema

The course grade will be determined based on:

Assessment Task	Weightage (Percentage)	Nature (Individual/Group)	Week of Assessment	PLOs to be Assessed
A1 Class Participation	10%	Individual	Continuous	PLO1- 2, PLO 11-14
A2 Assignment 1	30%	Group	In 3rd Week	PLO 11-14
A3 Assignment 2	30%	Group	In 6th Week	PLO 11-14
A4 Project (continuous assessment	30%	Individual	In the last two classes	PLO 7, 9

Description of Assessments:

A1 Class Participation- You are expected to be attentive, regular, and on-time for the class.

A2 Assignment 1- The students will submit an assignment on the topic discussed in the class. Marks will be awarded based on the assessment rubric.

A3 Assignment 2- The students will submit an assignment on the topic discussed in the class. Marks will be awarded based on the assessment rubric.

A4 Project (Continuous Assessment)- The end term examination will be conducted in "continuous assessment" mode and the students will choose one topic for the final presentation. Marks will be awarded based on the assessment rubric.

Rubrics for Assessments

	Poor (0-5)	Average (6-15)	Above average (16-25)	Distinction (26-30)
Research Quality & variety of tools used for analysis **(10 Marks)**	Minimal analysis with an insufficient number of tools and techniques used for analysis.	Acceptable analysis with a minimum number of tools and techniques used for analysis	Sufficient analysis with an adequate number of tools and techniques used for analysis	Analysis with meaningful insights and more than a relevant number of tools and techniques used for analysis.

	Poor (0-5)	Average (6-15)	Above average (16-25)	Distinction (26-30)
Quality/Robustness of analysis Quality of analysis such as time horizon, peer group comparison, industry analysis etc. **(10 Marks)**	Insufficient quality without a robust analysis	Acceptable quality and robustness of analysis	Good quality and robustness of analysis	Excellent quality and robustness of analysis.
Logical flow Organisation of ideas; Ability to sustain audience interest **(5 Marks)**	Not attempted or entirely or significantly plagiarized from other sources.	Organisation of ideas generally clear. Presentation displays basic use of techniques (examples / headings / visuals etc) to develop audience interest.	Organisation of ideas clear. Presentation uses a variety of techniques (examples / headings / visuals etc.) that are used well to sustain audience interest.	Organisation of ideas extremely clear. Presentation solidly uses varied and innovative engagement techniques (examples / headings / visuals etc.) to sustain audience interest.
Attention to Detail · Group cohesion/synergy · Clarity of speech /eye contact / pacing &enthusiasm · Visual tools (e.g., PowerPoint slides) · Dress standard · Citations and Referencing **(5 Marks)**	The problems in one or more of the areas listed prevented audience understanding. References were absent from visuals.	The problems in one or more of the areas listed impacted audience understanding.	Group performance in all areas listed considerably assisted audience understanding.	Group performance in all areas listed was of a high quality and greatly assisted audience understanding.

Teaching Method

The pedagogic method employed in this course will be a combination of lectures, class discussions, and problem sets (to be done on Python). Issues and concepts fundamental to the course will be first explained to the students through the medium of lectures. They will then be guided the application of concepts using Python. Periodically themes will be developed from these discussions upon which students will be asked to do a project.

Textbook / Other Readings

Textbook:

1. Analysis of Financial Time Series (Third Edition), Wiley Publication by Ruey S. Tsay.
2. Portfolio Optimization Theory and Application, Cambridge University Press, 2025 by Daniel P. Palomar

Session Plan

Session Details	**Topics**	**PLOs Covered**
Session 1	**Introduction to Financial Analytics with Python**	PLO 7-8
Objective of the session	The basics of financial analytics and Python programming.	
Subtopics to be covered	Overview of financial analytics, introduction to Python, data visualization in Python.	
Readings	Ch 1 of Analysis of Financial Time Series (Third Edition), Wiley Publication by Ruey S. Tsay. Ch 2 of Portfolio Optimization Theory and Application, Cambridge University Press, 2025 by Daniel P. Palomar	
Case Title & Number	NA	
Pedagogy	Lecture & Class Discussion	
Session 2- 3	Exploratory Data Analysis (EDA) in Finance	PLO 7-9
Objective of the session	The importance of exploratory data analysis in finance.	
Subtopics to be covered	Summary statistics and visualization, correlation analysis, and pattern recognition	
Readings	Ch 1 of Analysis of Financial Time Series (Third Edition), Wiley Publication by Ruey S. Tsay. Ch 4 and 5 of Portfolio Optimization Theory and Application, Cambridge University Press, 2025 by Daniel P. Palomar	
Case Title & Number	NA	
Pedagogy	Lecture & Class Discussion	
Session 4- 5	Portfolio Theory and Optimization	PLO 7-9
Objective of the session	Explore modern portfolio theory and optimization techniques	
Subtopics to be covered	Efficient Frontier and risk-return trade-off, Portfolio optimization using Python	
Readings	Ch 6 and 7 of Portfolio Optimization Theory and Application, Cambridge University Press, 2025 by Daniel P. Palomar	
Case Title & Number	NA	
Pedagogy	Lecture & Class Discussion	
Session 6- 7	Financial time series analysis – Modelling and forecasting with economic significance	PLO 7-9
Objective of the session	Time series analysis concepts, Identification of time series, Fit of the model	

Subtopics to be covered	Stationarity, auto-covariance, ACF, AR, MA, and ARMA models, fit the model, generate forecasts, and evaluate the forecasts based on statistical and economic significance.	
Readings	Ch 2 of Analysis of Financial Time Series (Third Edition), Wiley Publication by Ruey S. Tsay.	
Case Title & Number	NA	
Pedagogy	Lecture & Class Discussion	
Session 8-10	Financial time series analysis – Modelling and forecasting with economic significance	PLO 7-9
Objective of the session	Volatility modeling	
Subtopics to be covered	Discuss volatility modeling and forecasting based on GARCH family of models with evaluation based on statistical and economic significance.	
Readings	Ch 3-4 of Analysis of Financial Time Series (Third Edition), Wiley Publication by Ruey S. Tsay.	
Case Title & Number	NA	
Pedagogy	NA	
Session 11	Guest Lecture	PLO 9
Objective of the session	Bridging Finance and Data: Real World Application of Financial Analytics	
Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	NA	
Session 12-13	Final Presentation	PLO 1- 2, 11- 14
Objective of the session	NA	
Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	NA	
Session 14	Reading & Revision Week/ Examination Week*	
Objective of the session	NA	
Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	NA	
Session 15	Reading & Revision Week/ Examination Week*	
Objective of the session	NA	

Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	NA	

*Elective Endterm Examinations may take place in the last week of classes.

Disability Support

JGU endeavours to make all its courses accessible to students. The Disability Support Committee (DSC) has identified conditions that could hinder a student's overall wellbeing. These include physical and mobility-related difficulties, visual impairment, hearing impairment, mental health conditions, and intellectual/learning difficulties, e.g., dyslexia and dyscalculia. Students with any known disability needing academic and other support are required to register with the Disability Support Committee (DSC) by following the procedure specified at **https://jgu.edu.in/disability-support-committee/**

Students who need support may register any time during the semester up until a month before the end semester exam begins. Those students who wish to continue receiving support from the previous semester, must re-register within the first month of a semester. Last-minute registrations and support might not be possible as sufficient time is required to make the arrangements for support.

The DSC maintains strict confidentiality about the identity of the student and the nature of their disability and the same is requested from faculty members and staff as well. The DSC takes a strong stance against in-class and out-of-class references made about a student's disability without their consent and disrespectful comments referring to a student's disability.

All general queries are to be addressed to **disabilitysupportcommittee@jgu.edu.in**

Disclaimer: This course outline including assessments, mode, nature and weightage of assessments, sessions, sequence of sessions and/or readings may be revised during the semester if such need arises.