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| **MARWADI UNIVERSITY**  Rajkot (Gujarat) |

**Lecture Plan, Academic Session 2024-27**

**Name of the Faculty:** Abhishek Chauhan

**Name of the Subject Allotted:** AlgoTrading using Python

**Academic Session / Semester:** 2025-2026/ SEM II

**Branch / Year / Sections**: MSc/2/Fintech.

| **Block No.** | **Date** | **Session No** | **Content to be Covered** | **Actual Topics Covered** |
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| **Unit 1** |  | 1 | Basics of Algorithmic Trading |  |
|  | 2 | |  | | --- | |  |  |  | | --- | | Market Microstructure | |  |
|  | 3 | |  | | --- | |  |  |  | | --- | | Key Trading Strategies | |  |
|  | 4 | |  | | --- | |  |  |  | | --- | | Risk Management in Algo Trading | |  |
|  | 5 | Role of AI in Trading |  |
|  | 6 | |  | | --- | |  |  |  | | --- | | Case Study: HFT Firms | |  |
|  | 7 | |  | | --- | |  |  |  | | --- | | Recap & Group Discussion | |  |
|  | 8 | Hands-on Activity: Simulate Simple Algo Strategy |  |
| **Unit 2** |  | 9 | Introduction to Python & Pandas for Financial Data |  |
|  | 10 | Data Preprocessing with Pandas |  |
|  | 11 | Data Visualization using Matplotlib |  |
|  | 12 | Candlestick Charting with Python |  |
|  | 13 | Strategy Backtesting – Part I |  |
|  | 14 | Strategy Backtesting – Part II |  |
| **Unit 2** |  | 15 | Live Trading using Broker APIs |  |
|  | 16 | Building a Simple Trading Bot |  |
|  | 17 | Capstone: Integrating ML into a Trading Bot |  |
|  | 18 | Practical Assessment & Review |  |
| **Unit 3** |  | 19 | Introduction to Technical Analysis |  |
|  | 20 | Moving Averages & Indicators |  |
|  | 21 | Candlestick Pattern Analysis |  |
|  | 22 | Trend Indicators: MACD, RSI |  |
|  | 23 | Momentum & Volume Indicators |  |
| **Unit 3** |  | 24 | Volatility Indicators: ATR, Bollinger Bands |  |
|  | 25 | Risk Metrics: Sharpe, Sortino Ratios |  |
|  | 26 | Implementing Indicators in Python |  |

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| **Unit 3** |  | 27 | |  | | --- | |  |  |  | | --- | | Building & Backtesting a Technical Strategy | |  |
|  | 28 | |  | | --- | |  |  |  | | --- | | Case Study: Momentum-based Strategy | |  |
|  | 29 | Project Review: Technical Strategy Reports |  |
| **Unit 4** |  | 30 | Case Study: Algo Trading in NSE/BSE |  |
|  | 31 | AI/ML for Predictive Trading – Theory |  |
|  | 32 | AI/ML for Predictive Trading – Implementation |  |
|  | 33 | Risk & Compliance: Regulations in India |  |
| **Unit 4** |  | 34 | Case Study: Predicting Stock Prices with ML |  |
|  |  | 35 | Integrating Compliance in Trading Systems |  |
|  |  | 36 | Final Group Project Discussion |  |
|  |  | 37 | Project Presentations |  |
|  |  | 38 | Final Review & Feedback Session |  |
|  |  | 39 |  |  |
|  |  | 40 |  |  |