



COURSE MANUAL

**Name of the Elective Course :
Algorithmic Trading**

**Name of the Faculty
Dr. Manmeet Kaur**

**Spring 2025
(AY2024-25)**

This document is prepared by the course instructor and contains basic information relevant to the execution of the course. It is the official record for all intends and purposes as far the elective course, ***Algorithmic Trading*** , is concerned.

This course manual can be used as a general guide to the subject. However, the instructor can modify, extend or supplement the course (without tampering its basic framework and objectives) for the effective and efficient delivery of the course. The instructor will provide students with reasons for such changes.

Part I

Course Title: **Algorithmic Trading**

Course Code:

Course Duration: **One Semester (15 Weeks)**

No. of Credit Units: **4Credits**

Level: **UG or PG or Both**

Medium of Instruction: **English**

Pre-requisites: no

Equivalent Courses:

Cross-Listed Course: (Response to this question is mandatory): Yes

Part II

1. Course Description

A key change which has taken place in the Indian capital market during the last three years has been the introduction of the programmed trading software replacing the manual trading strategies applied. This has been known to the world as algorithmic trading and has been accused of the financial catastrophies like black Monday in US in the equity markets and now the crash in the silver prices recently in the Indian commodity markets. Many of the sudden and precipitous declines in equity markets too are being attributed to the algorithmic trading which has garnered a large proportion of derivatives trading in India. Recent recessions, bubbles, mortgage crises and regulations. The present course will foster the awareness and understanding of the trading landscape and basic terminology of stock markets and how these market function. We also focus on the technical and fundamental analysis which are heavily used by the stock market traders and investors. In the technical analysis, the students will learn about different kind of charts, chart patterns, Dow theory, trading strategies based on candlestick patterns, level of entry and exit, stop loss and profit booking, etc. In the fundamental analysis, we will discuss all kinds of ratios related to profitability, efficiency, liquidity, solvency, and valuation of the companies. This course will be a comprehensive package to learn the Indian stock market mechanism, technical analysis, and fundamental analysis. After learning the concepts in this course, the student will be able to invest in the share market confidently. There is no pre-requisite to be part of this course.

Disclaimer: This course is purely for educational purpose. Investments in equity market is subject to market risk, and you can lose your entire capital. Hence, take advise of your financial advisor before trading and investing in share market.

2. Course Aims

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

- Able to do financial statement analysis of companies
- Able to do Inter-firm comparison using fundamental analysis and trading opportunity using technical analysis
- Identifying a right level of entry/exit for investment in any company
- Learn different strategies of investing in stock market

3. Teaching Methodology

The course will be based on experiential learning by hands on training of trading in stock markets. Most of the sessions would be student centered learning based where students would be encouraged to be more active in the classroom for discussions and real learning.

4. Intended Learning Outcomes

Course Intended Learning Outcomes	Weightage	Teaching and Learning Activities	Assessment Tasks/ Activities
By the end of the course, students should be able to:			1. Class Participation 2. Research paper 3. Group presentation
Discuss and debate on financial statement analysis of companies	% 30	1. In- class case discussion 2. Explaining concepts in details 3. Debates on stock markets topics	
Apply technical analysis to real financial markets.	% 50		
Analyse and identify right strategies of entry/exit for investment in any company.	% 20		

5. Grading of Student Achievement

To pass this course, students must obtain a minimum of 40% in the cumulative aspects of coursework, e.g. internal assessments and final examination. **End of semester examination will carry 50 marks or 30 marks, as the case may be, out of which students have to obtain a minimum of 30% to fulfil the requirement of passing the course.**

Grade Sheet

Percentage of Marks	Grade	Grade Value	Grade Description
80 and above	O	8	Outstanding – Exceptional knowledge of the subject matter, thorough understanding of issues; ability to synthesize ideas, rules and principles and extraordinary critical and analytical ability
75 – 79	A+	7.5	Excellent - Sound knowledge of the subject matter, thorough understanding of issues; ability to synthesize ideas, rules and principles and critical and analytical ability
70 – 74	A	7	Very Good - Sound knowledge of the subject matter, excellent organizational capacity,

Percentage of Marks	Grade	Grade Value	Grade Description
			ability to synthesize ideas, rules and principles, critically analyse existing materials and originality in thinking and presentation
65 – 69	A-	6	Good - Good understanding of the subject matter, ability to identify issues and provide balanced solutions to problems and good critical and analytical skills
60 – 64	B+	5	Fair – Average understanding of the subject matter, limited ability to identify issues and provide solutions to problems and reasonable critical and analytical skills
55 – 59	B	4	Acceptable - Adequate knowledge of the subject matter to go to the next level of study and reasonable critical and analytical skills.
50 – 54	B-	3	Marginal - Limited knowledge of the subject matter and irrelevant use of materials and, poor critical and analytical skills

NEW COURSE LETTER GRADES AND THEIR INTERPRETATION			
Letter Grade	Percentage of Marks	Grade Points	Interpretation
P1	45 - 49	2	Pass 1: Pass with Basic understanding of the subject matter.
P2	40 - 44	1	Pass 2: Pass with Rudimentary understanding of the subject matter.
F	Below 40	0	Fail: Poor comprehension of the subject matter; poor critical and analytical skills and marginal use of the relevant materials. Will require repeating the course.
I	Incomplete		Extenuating circumstances preventing the student from completing coursework assessment, or taking the examination; or where the Assessment Panel at its discretion assigns this grade. If an "I" grade is assigned, the Assessment Panel will suggest a schedule for the completion of work, or a supplementary examination.

6. Criteria for Student Assessments

Internal assessment of the participants will be based on the following criteria. In case any of the participants miss the IA tests, alternative internal assessments will be conducted (Please specify the alternative assessment)

Assessment	Weightage	Remarks
Class Participation	10 Marks	Class Participation and discussions
Group project	20 Marks	Students will be required to submit one case study analysis based on given situation by instructor.
Individual Assignment	30 Marks	Students will be required to submit one individual assignment based on analysis of companies or given situation by instructor.
End Semester Examination	40 marks	Students will be required to submit individual project. Project will involve application of course content to the primary/secondary data. Detail guidelines for submission and evaluation will be circulated during the term.

Part IV

Course/Class Policies

Academic Integrity and Plagiarism

Learning and knowledge production of any kind is a collaborative process. Collaboration demands an ethical responsibility to acknowledge who we have learnt from, what we have learned, and how reading and learning from others have helped us shape our own ideas. Even our own ideas demand an acknowledgement of the sources and processes through which those ideas have emerged. Thus, all ideas must be supported by citations. All ideas borrowed from articles, books, journals, magazines, case laws, statutes, photographs, films, paintings, etc., in print or online, must be credited with the original source. If the source or inspiration of your idea is a friend, a casual chat, something that you overheard, or heard being discussed at a conference or in class, even they must be duly credited. If you paraphrase or directly quote from a web source in the examination, presentation or essays, the source must be acknowledged. The university has a framework to deal with cases of plagiarism. All form of plagiarism will be taken seriously by the University and prescribed sanctions will be imposed on those who commit plagiarism.

Disability Support and Accommodation Requirements

JGU endeavours to make all its courses accessible to students. In accordance with the Rights of Persons with Disabilities Act (2016), the JGU Disability Support Committee (DSC) has identified conditions that could hinder a student's overall well-being. These

include physical and mobility related difficulties, visual and hearing impairment, mental health conditions and intellectual/learning difficulties e.g., dyslexia, 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 examination 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**

Safe Space Pledge

This course may discuss a range of issues and events that might result in distress for some students. Discussions in the course might also provoke strong emotional responses. To make sure that all students collectively benefit from the course, and do not feel disturbed due to either the content of the course or the conduct of the discussions. Therefore, it is incumbent upon all within the classroom to pledge to maintain respect towards our peers. This does not mean that you need to feel restrained about what you feel and what you want to say. Conversely, this is about creating a safe space where everyone can speak and learn without inhibitions and fear. This responsibility lies not only with students, but also with the instructor.

P.S. The course instructor, as part of introducing the course manual, will discuss the scope of the Safe Space Pledge with the class.

Cell Phones, Laptops and Similar Gadgets

Part V

Keywords Syllabus

Course Design and Overview (Weekly Plan)

Week	Topic and Description	Reading/Course Materials
1.	Understanding the stock market mechanism: <ul style="list-style-type: none">• Different asset classes (Debt, Gold, Equity, Cryptocurrency, etc.)• Regulators (SEBI)• Exchanges (NSE and BSE)	https://www.chicagobooth.edu/review/are-markets-efficient
2.	Understanding the stock market mechanism: <ul style="list-style-type: none">• Brokers• Depository and Depository Participants• IPOs and FPOs• Settlement Cycles• Corporate actions and price changes	http://www.efficientfrontier.com/ef/900/15st.htm
3-5	Fundamental Analysis (Quantitative and Qualitative analysis): <ul style="list-style-type: none">• Ratio Analysis• Management of company• Corporate governance and awards• Related party transactions• DII/FII investments• Who are shareholders?• Political connections Promoters' history	
6-7	Mastering Technical Analysis with	

	<ul style="list-style-type: none"> • Live Trading Sessions: • Types of charts (Line chart, candlestick charts) • Chart patterns (Dow patterns) • Candlestick patterns • Moving averages and golden crossover • Support and Resistance • Trend Lines <p>Indicators (RSI, Bollinger band, MACD, etc.)</p>	
8-9	<p>Art of Scalping/Intraday trading with Live Trading Sessions:</p> <ul style="list-style-type: none"> • Decide your trading setup • Deciding entry, exit and stoploss • Breakout trades • Reversal trades • Long trades and • Short trades • Paper trading <p>(Virtual on Moneybhai.com)</p> <ul style="list-style-type: none"> • Risk to Reward Ratio 	
10	<p>Art of BTST and Swing trading with Live Trading Sessions:</p> <ul style="list-style-type: none"> • Buy today sell tomorrow trades setup <p>Swing trades setup</p>	
11-12	<p>Art of Techno-Fundamental Trading:</p> <ul style="list-style-type: none"> • Identifying quality stocks using screener website • Using Tradingview website effectively • Use futures and • options trade data • (moneycontrol.com) 	
13	<p>Art of Mastering Trading Psychology with Live</p> <p>Trading Sessions:</p> <ul style="list-style-type: none"> • Cognitive biases • Confirmation bias • Anchoring bias 	

	<ul style="list-style-type: none"> • Disposition effect • Fear of missing-out • Fear of being invested 	
14	<p>Art of Risk Management with Live Trading Sessions:</p> <ul style="list-style-type: none"> • Using Call Options • Using Put Options • Using Futures Contracts 	
15	Presntations	

Part VI Relevant Readings

There is no specific textbook for the course, though there are many optional texts available for students to refer to. There are many online courses and YouTube videos which may help you for a better understanding the contents of the course. All the data, slides, or notes would be provided before each class. Cases and any other reading material assigned for reading will be provided to you in a course pack and will be uploaded in the e-learning platform.

1. Bodie, Z., Kane, A. & Marcus, A. J. (2017). *Investments*. New York: McGraw-Hill Education.
2. Gurman and Jochnk, *Fundamentals of Investing*, Pearworth
3. Neftci, S.N. *An introduction to the Mathematics of Financial Derivatives*. Academic Press.
4. www.ncdex.com for details on commodity derivatives in India
5. www.nse-india.com for stock-based derivatives.