COURSE SYLLABUS

Course Number: CMSC 197
Course Title: Special Topics
Course Description: Introduction to Quantitative Trading Simulation
Course Outcomes:

At the end of the semester, the students can:

1. Apply statistical and technical analysis for trading in financial markets
2. Evaluate complex charts to find trading patterns and trading signals
3. Apply fundamental analysis and technical analysis algorithms in Philippine Stock market.
4. Collaborate in the development of a rule-based trading strategy using different market indicators.
5. Apply rule-based trading strategies on stock market data
6. Analyse and evaluate the performance of trading strategies and techniques

Course Design

Content Topics	**Learning Outcomes** ***(At the end of the session, the students can...)***	**Learning Activities**	**Resources**	**Output**	**Assessment Tool**
Basic Market Concepts and Introduction to Online Trading. (1.5 hrs Lec)	Discuss the motivation behind online trading Identify the advantages and disadvantages of normal trading and online trading Differentiate the different style and types of traders in financial markets	Interactive Discussions	Book references Internet links	Slideshow presentation	Participation % Score

Introduction to Different Application used in Quantitative Trading Simulations (1.5 hrs lec, 1.5hrs)	Identify different career paths available in Quantitative Trading Simulations Analyze financial market data using the different applications for quantitative trading simulations Generate trend lines, support and resistance level on specific charts	Interactive discussion Program demonstration Hands-on exercises	Book references Online links Exercise reference material	Technical Report	%Score (based on Rubric)
Introduction to MetaTrader (1.5 hours Lec)	Apply statistical analysis in financial market using MetaTrader Utilize different functionalities in MetaTrader for advanced technical analysis	Interactive discussion Program demonstration Hands-on exercises	Book references Online links Exercise reference material	Technical Report	%Score (based on Rubric)
First Long Examination				Lecture Exam	% Score
Final Paper Proposal Tier 1	Analyze high level specification and draft a software proposal with sufficient elaboration of its feature set Defend design choices of features to be implemented Identify the individual strengths and weaknesses and their impact on the project's success	Group brainstorming	Book references Online links The World Wide Web Exercise reference material Consultation Feedback	Topic Selection and initial proposal draft	
Introduction to Advanced Market Concepts in Online Trading (1.5 hour Lec)	Describe the different concepts that are essential in statistical and technical analysis in online stock trading	Interactive discussion	Book references Online links Exercise reference material	20-item Objective Test	% Score
Trading Risks (1.5 hrs Lec)	Identify possible risk through chart pattern	Interactive discussion	Book references		%Score (based on

	analysis Develop strategies in minimizing the effects of trading risk through statistical and technical analysis		Online links Exercise reference material		Rubric)
Price and Price Bars(1.5 hrs Lec)	Describe the different ways of visualization of financial or stock market data	Interactive discussion Program Demonstration	Book references Online links Exercise reference material		%Score (based on Rubric)
Trading Chart Patterns (1.5 hrs Lec)	Describe the different chart patterns used to predict future price movements Devise strategies in capturing common chart patterns in time series data	Interactive discussion	Book references Online links Exercise reference material	Technical Report	%Score (based on Rubric)
Second Long Examination				Lecture Exam	% Score
Final Paper Proposal Tier 2		Group Brainstorming Consultation	Book references Online links The World Wide Web Consultation Feedback	Initial Draft of Final Paper	%Score (based on Rubric)
Data Filtering (1.5 hrs Lec)	Apply different data filtering methods on financial and stock market data Evaluate the effect of different filtering	Interactive discussion	Book references Online links	Slideshow Presentation	%Score (based on Rubric)

	techniques in statistical and technical analysis	Hands-on exercise	Exercise reference material		
Performance Metrics (1.5 hrs Lec)	Explain the different metrics used to evaluate the performance of a trading strategy Develop different iterations of trading strategy based on performance evaluation	Interactive discussion Hands-on Exercises	Book references Online links Exercise reference material		
Third Long Examination				Lecture Exam	% Score
Project Tier 3	Produce a pre-final version of the final paper Implement appropriate changes on the proposed trading strategy based on the results of performance evaluation	Group Brainstorming Consultation	Book references Online links The World Wide Web Exercise reference Consultation Feedback	Revised Draft of Final Paper	%Score (based on Rubric)
Final Examination				Final Lecture Exam Final Laboratory Exam	% Score % Score
Final Project Presentation	Defend the proposed trading strategy devised Evaluate the performance of the proposed trading strategy based on standard metrics			Final Paper	

Rubrics for evaluation

I. Technical Report[1]

[1] Removed due to space concerns. There are files detailing these as well as for oral presentation.

	Unsatisfactory	Satisfactory	Excellent
Overview	- Fails to provide an overview and define the scope of work	- Provides an adequate overview and general explanation on the scope of the work	- Provides a thorough overview and thoroughly defines the scope of the work
Structure	- Paragraphs are poorly organized	- Paragraphs are usually well-organized - Use of sections is logical and generally allows easy navigation of the document	- All paragraphs are well-organized - Use of sections is logical and allows easy navigation of the document
Sample Calculations and Simulations	- Fails to provide relevant sample calculation and sample simulation results	- Demonstrates adequate relevant calculations and significant simulation results	- Provides in-depth explanation of the relevant calculations and show simulation results where necessary
Documentation and References	- Fails to correctly document any sources or to utilize citation forms - Less than 50% of the references cited are within the last 5 years	- Most sources are correctly documented - Appropriate citation forms are generally utilized - 50% to 80% of the references cited are within the last 5 years	- All sources are correctly and thoroughly documented - Appropriate citation forms are utilized - More than 80% of the references cited are within the last 5 years

II. Slideshow Rubric[2]

	Unsatisfactory	Satisfactory	Excellent
Content	- Content is inaccurate and information is not presented in a logical order	- Content is accurate but information is not presented in a logical order	- Content is accurate and information is presented in a logical order
Mechanics	- Many spelling errors and grammar errors - Text is copied	- Some spelling errors and some grammar errors - Text is in author's own words	- No spelling errors and grammar errors - Text is in author's own words
Slideshow Creation	- Presentation has no flow - Insufficient number of slides	- Presentation flows well - Some tools used to show acceptable understanding - Appropriate number of slides	- Presentation flows well and logically - Presentation reflects intensive use of tools in a creative way - Appropriate number of slides

[2] Removed due to space concerns. There are files detailing these as well as for oral presentation.

Pictures, Graphs, and Background	- No images utilized	- Most images are appropriate	- Images are appropriate - Layout of images is pleasing to the eye

III. Oral Presentation Rubric[3]

	Unsatisfactory	Satisfactory	Excellent
Introduction	- Lecture went straight into content	- Some introduction given - Lecturer gave broad/short comment on about the lecture and then began	- A clear, concise, and complete explanation was presented to frame the content to be presented
Composure	- No eye contact - Poor posture/body languages - Looks at computer/paper - Does not appear confident	- Good posture - At times establishes eye contact with various individuals - Some expression of confidence	- Good posture - Appears relaxed and confident - Established eye contact all throughout the presentation
Style	- Monotone speech - No pauses to gauge audience	- Makes it clear which content points are most important - Makes some strategic pauses after difficult content	- Pauses strategically to gauge audience - Repeats and emphasizes most important points in the content - Summarizes the content in a clear and efficient manner
Closing/Wrap-up	- Ending didn't appear to be coming and then was sudden stop	- Ended by stating a conclusion with reference to major points made during the lecture	- Ended by summarizing the content with presentation of clear "take home messages"

Grade Composition

1. Technical Reports - 10%
2. Presentations - 10%
3. Long Exams - 30%
4. Final Exams - 30%
5. Final Paper - 20%

TOTAL 100%

[3] Removed due to space concerns. There are files detailing these as well as for oral presentation.

Bibliography

Krefetz, Gerald. Leverage - The Key to Multiplying Money. John Wiley and Sons, 1986.

Parfenovich, Dmitry. A Quick Start or a Short Guide for Beginners. http://ww.mql5.com/en/articles/496

Benjamin Graham and Jason Zweig (2003) The Intelligent Investor, HarperBusiness Essentials.

Lars N. Kestner (2003) Quantitative Trading Strategies - Harnessing the Power of Quantitative Techniques to Create a Winning Trading Program, McGraw-Hill

Michael Harris (2008) Profitability and Systematic Trading, John Wiley & Sons.

Chris Satchwell (2005) Pattern Recognition and Trading Decisions, McGraw-Hill

Bill Kraft (2008) Trade Your Way to Wealth, John Wiley & Sons