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Course Syllabus
Department

BA 521 Corporate Finance for Data Science
(Financial Time Series Data Analysis)
Fall 2019

Instructor: Erhan Muğaloğlu, PhD
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Office Hours: Wednesday 13:30 - 14:30

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Office/Phone:

Course days and hours: _Friday 17:10-20:00_;
Location: _R103 or LB212_
Course Credit: 3 (? ECTS)-
Course Prerequisites: None

Course Description: This course intends to provide an intermediate knowledge to linear financial econometric models and their applications to modeling and forecast methods for time series data. It aims to improve students' financial data analysis skills, understand the applied models of financial time series and teach structural features of financial data.

Suggested Textbooks: (1) Tsay, R. S. (2014). An introduction to analysis of financial data with R. John Wiley & Sons. (Main Textbook)
(2) Tsay, R. S. Analysis of Financial Time Series, 2005.
(3) Hamilton, J. D. (1994). Time series analysis (Vol. 2, pp. 690-696). Princeton, NJ: Princeton university press.,
(4) Box, G. E., Jenkins, G. M., Reinsel, G. C., & Ljung, G. M. (2015). Time series analysis: forecasting and control. John Wiley & Sons.

Software: R and RStudio

Teaching Methodology: Learners will be provided with as much opportunities of hands-on practice as possible with the aim of striking a balance between learner-centeredness and sufficient guidance. Various forms of interaction (i.e. pair work and group work) will also be encouraged to cater for learners with different learning styles. Additionally, individuals will be expected to produce both in-class writings and homework assignments in addition to the reading tasks, which will encourage them to reflect and think critically. Technology will also be incorporated into the classroom procedures in order to create a better learning environment.

Grade Distribution: *Final grades are based on the following*

Evaluation Criteria	Percentage
Project Paper (1 total)	40%
Project Presentation	25%
Final Exam (in class, 1 Total)	35%
	_____
	Total: 100%

Grading Scale:

A	4,00	90-l00
A-	3,67	87-89
B+	3,33	83-86
B	3,00	80-82
B-	2,67	77-79
C+	2,33	73-76
C	2,00	70-72
C-	1,67	64-69
D+	1,33	56-63
D	1,00	50-55
F	0,00	0-49

For a detailed description of grading policy and scale, please refer to the website https://goo.gl/HbPM2y section 28.

Course Policies:
- For the AGU Make-up policy, please refer to the website https://goo.gl/HbPM2y section 26.
- Please, no eating in class
- English should be used at all times to communicate with one another during instruction hours.
- Please, respect the allotted times provided for breaks.
- Cell phones must be turned off and put away during class. Personal computers are only to be used during in-class lab times and only for class assignments. Unless it is part of the lecture time activity assigned by the instructor, do not use the computer. When using the computer do not surf on the web or write personal emails, etc. Consequences include but are not limited to loss of participation points, extra assignments, and/or being asked to leave the classroom.
- Please, bring the required materials, including textbooks and notebooks.
- Please be prepared, having read, written and studied the assigned lessons, articles, or passages;
- Please be ready to write assignments in class that will be graded; and most importantly work cooperatively with other students.

Attendance Policy:
- Be in the class on time (being late for class is an extreme annoyance to the entire class).
- Class attendance is strongly recommended and will count toward your participation grade. Regular class time will include informal assessment activities for which points will be assigned. Participation in these activities will help you prepare for exams and homework and also provide me with feedback on your progress.
- For a detailed description of AGU attendance policy, please refer to the website at https://goo.gl/HbPM2y section 25.

Email Policy:
When contacting the instructor or the course assistant, please use the Canvas email feature. Only use my firstname.lastname@agu.edu.tr if Canvas is not accessible (server down, etc). Include in the subject line the class and section number (CISXXX, Section XXXX). If this information is not included, your email may not be answered. Any announcements or warnings will be send to your AGU e-mail. Therefore it is the responsibility of every student to read his/her AGU e-mails and CANVAS emails regularly. AGU webmail can be accessed through *https://mail.agu.edu.tr*

Cheating & Plagiarism:
You are responsible for knowing the University policies on cheating and plagiarism. Not giving credit to a person for their intellectual work and passing it off as your own is stealing.
Specifically:
1) Copying or allowing someone to copy your work on an exam, homework, or in class assignment is cheating.
2) Cutting and pasting material from the web or any other electronic source is plagiarism.
3) Copying and turning in the same assignment as someone else, from this class or from another class, is cheating. Unless explicitly told otherwise, you can discuss and problem- solve on homework together but the final product has to be your own – not just your own handwriting but your own way of explaining and organizing your ideas.
4) Making superficial changes (minor additions, deletions, word changes, tense changes, etc) to material obtained from another person, the web, a book, magazine, song, etc. and not citing the work, is plagiarism. The idea is the intellectual property, not the specific format in which it appears (e.g., you wouldn't reword Einstein's theory of relativity and imply that relativity was your own idea, would you?)
5) If you find material and it is exactly what you are trying to say, or you want to discuss someone's idea, give the person credit and cite it appropriately. Don't overuse citations and quotes: instructors want to know how you think and reason, not how some one else does.

If you have any questions or concerns about whether your behavior could be interpreted as plagiarism, please ask the assistants or me before you submit the work.

For a detailed description of AGU policies, please refer to the website at https://goo.gl/FjLhzH

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Course Record Catalogue

Course Outline:

Week	Date	Topic	Text Chapters*	Project
1st	Sep 18-24	Price and Return Data	Chapter 1	
2nd	Sep 25-Oct 01	Distributional Properties of Return Data	Chapter 1	Set Project Topic
3rd	Oct 2-8	Stationarity of Data	Chapter 2	Declaration of Main Research Thesis
4th	Oct 9-15	Autocorrelation (ACF) and Partial ACF of Time Series Data	Chapter 2	Literature Review-1
5th	Oct 16–22	Autoregressive (AR) Models and Their Properties	Chapter 2	Literature Review-2
6th	Oct 23-29	Moving Average (MA) Models and Their Properties	Chapter 2	Data and Descriptive Statistics + Graphs
7th	Oct 30-Nov 05	Unit Root Non- Stationarity	Chapter 2	Data Estimations (Model Decision)
8th	Nov 6-12	Regression with Time Series Errors	Chapter 3	Data Estimations (Forecasts?)
9th	Nov 13-19	Fall Break		
10th	Nov 20-26	Applied Example: Crude Oil Price Forecast	Chapter 3	Testing Estimations Robustness (Accuracy)
11th	Nov 27-Dec 03	Volatility Modeling- ARCH	Chapter 4	Methodology
12th	Dec 4-10	Volatility Modeling- GARCH	Chapter 4	Implications of Results-1
13th	Dec 11-17	Applied Example: CAPM Beta Estimation	Chapter 5	Implications of Results-2
14th	Dec 18-24	Applied Example: Minimum Variance Portfolio	Chapter 5	Review of the Draft
15th	Dec 25-31	Project Presentations		Presentation of Results
16th	Jan 2-11	Final Exam Week	Final Exam	Submission of the Paper Deadline: 10.01.2020

* Tsay, R. S. (2014). An introduction to analysis of financial data with R. John Wiley & Sons.