Department of Administrative Sciences
Metropolitan College, Boston University

Syllabus

MET AD685 C2 Quantitative Methods for Finance

(Summer 1, 2019)

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1.   Course Overview

1.1   AD 685 Quantitative Methods for Finance

Finance is a highly competitive and dynamic industry that demands quantitative oriented professionals. Therefore, this course will equip students with the empirical techniques which are mostly used in the analysis of financial markets with strong focus in financial applications using actual data.

In particular, the emphasis will be on classical linear regression models, time series analysis, and limited dependent variable models applied to the following topics: predictability of asset returns; econometric tests of the CAPM and multifactor models; volatility modelling, etc.

1.2   Introduction

- A schedule of reading assignments and assigned problems is given in the course schedule. Students are expected to prepare for the lectures as well as to do research on their own. The objective of the lectures will be to guide and clarify student learning. I strongly encouraged you to take advantage from synchronous learning opportunities with your instructor, and classmates.

- There will be quizzes, assignments, and discussions on financial applications using actual data. A term paper will be assigned. This will consist in a comprehensive Empirical Project, and it will require from you to answer practical finance questions by means of econometric methods. By doing the case, you will integrate various

econometric methods. The final exam will cover the readings, online material, lectures, and assigned problems. Real-world issues and applied problems will be the foundation of the course.

1.3   Prerequisites

a)   Courses:
Prereq: None

b)   Optional, but highly recommended
(Free preparatory laboratories in Math and Statistics)
You need some background knowledge in mathematics, in particular some elements of matrices, probability theory, and statistics.

2.   Basic Information

Instructor:

Ivan Julio, Ph.D. in Financial Economics

Contact:	julio@bu.edu
	617-358-6908
Office:	1010 Commonwealth Ave, Room 428, Boston, MA, 02215, USA
Hours:	By appointment – please send me an email to schedule a time. Also, I will stay after class if you have any questions.

3.   Text & Materials

3.1   Required Text:

We will be using the following:

"MyEconLab with eText access code". Price is around $120 if they purchase it directly through pearson website upon registration.

Please register for the course with my course ID and you will be prompted with a student purchase options page where you will be able to purchase this access code option. The course ID is:
<p style="text-align:center;color:red;">julio10806</p>
Follow instructions in Blackboard to register.

If you prefer to have a hard copy of the textbook, feel free to acquire but notice that you can buy the access to the e-version of the book when you buy the access to "MyEconLab". This option will always be more economical.

3.2   Software/Lab Sessions:

The Statistical Package recommended for this course is E-Views.
Even though, Eviews has an accessible price for students, you do not need to buy it. MET IT has installed Eviews in the virtual labs so it is available when you log in.

The virtual lab is reset when you log off and all the files are deleted.

To preserve their files or upload files to the virtual lab, students should Google Drive for which instructions are here: http://www.bu.edu/metit/vlabs-google-drive/

If you go on to more advanced econometrics techniques, you'll probably want also to have available slightly lower-level mid-level environments in which you can quickly program, evaluate and apply new tools and techniques. *R* is a powerful and popular free software environment for statistical computing and graphics that will allow you to do that.

https://www.r-project.org/

3.3 Optional Readings:

Wall Street Journal at:	www.wsj.com	
Business Week at:	www.businessweek.com	

3.4 Blackboard

This course will use a Blackboard site. Students are required to have a BU ID and password to log in. If you do not have a BU ID yet, note that this takes some time so be sure to start this process well before class starts. The site is:

http://learn.bu.edu

3.5 Others

In this course, you need to bring your laptop every class. I will be using EViews for classroom demonstrations and you will need it to solve problems, quizzes, etc.

4. Course Overview and Details

4.1 Course Learning Goals and Objectives

This goal of this course is to provide students with a number of econometric techniques, which are mostly used in the analysis of financial markets based on asset pricing and corporate finance models. In particular, the emphasis will be on classical linear regression models, time series analysis, and limited dependent variable models applied to the following topics: predictability of asset returns; event study analysis; econometric tests of the CAPM and multifactor models; volatility modelling, etc.

4.2   Course Expectations

a) The course will be conducted by a sequence of weekly classroom lectures.
b) We will have **weekly class discussions** on selected applied problems.

c) There will be assigned applied problems and questions throughout the course, and the student will be required to work on these problems. We will discuss these problems and questions during the lecture focusing on topics that are most challenging for the class.

d) You will have **weekly quizzes** on the material covered during the previous week.

e) Term Paper (or Project Case):

You have the option of writing the term paper in any topic of your interest within the financial economics field, as long as you apply some of the statistical and econometric tools covered in the course, especially multiple regression analysis. This is a great opportunity to apply and train your creative skills.

Since collecting data and choosing a topic related to finance might be a challenge, I have designed a case project that you can solve without any major problems. This case project may be used as a substitute for the term paper and it can be found in the folder "Content/Term paper" in Blackboard.

If you decide to write a term paper in a topic of your interest, please remember that a proper research paper must include a bibliography of information and works cited.

The papers should not exceed 15 double spaced pages, not including cover page and appendices.

The paper should be prepared using the APA writing style and guideline for references' format. You must provide a bibliography, and all direct quotations and data sources must be properly cited. The Department uses the APA style as to facilitate both, reading the paper and understanding references without being cumbersome as some of the other styles (such as Chicago or MLA). Students can download the student style guide from the American Psychological Association http://www.apastyle.org/elecref.html)   web site or you can purchase the APA style guide from the book store. There is even a help disk that can be purchased for about $ 40 (http://www.apa.org/software/) that will walk you through the process as you write the paper if you desire a more "personal assistance".

Papers are to be **RESEARCH PAPERS**. Remember that work that you use from other authors MUST be referenced. Since it is assumed that you are not an authority on the topic that you are writing, it is expected that this paper is an overview of many different sources of information. These must be contributed to the author using the APA format. This is *your* paper and not the cut and paste of someone else's work. The internet has led to a false sense of what research is all about. Those new to research tend to think that it means spending an afternoon surfing the internet and then an afternoon cutting

from material available. Keep in mind that the Internet is: (1) not quality oriented as it has good materials and not so good materials, and the Internet does not know the difference; (2) the Internet is NOT a sole source location. In particular, sources such as Wikipedia are the works of individual submitters which are not reviewed. Thus while many entries provide excellent information, some are fundamentally flawed or just plain wrong. Keep in mind that the Boston University Library as well as your local, state and the national US Library of Congress have extensive online services. USE THEM.

4.3 Schedule (TBA)

Please be aware that the schedule may be subject to changes. However, I will do my best to follow it.

Session 1 Study Guide

Topics:	Lecture 1: Introduction Lecture 2: Review of Probability	Week of May 20
Readings:	SW Chapters 1, 2. Online content	
Assignments:	Reading Ahead: Lecture 3 - Online content	
Assessments:	TBA	

Session 2 Study Guide

Topics:	Lecture 3: Review of Statistics	Week of May 20
Readings:	SW Chapter 3. Online content	
Assignments:	Assignment due on Tuesday, May 28 at 11.59 PM ET Reading Ahead: Lecture 4 - Online content	
Assessments:	TBA	

Session 3 Study Guide

Topics:	Lecture 4: Linear Regression with One Regressor	Week of May 20
Readings:	SW Chapter 4 Online content	
Assignments:	Assignment due on Tuesday, May 28 at 11.59 PM ET Reading Ahead: Lecture 5 - Online content	
Assessments:	TBA	

Session 4 Study Guide

Topics:	Lecture 5: Regression with a Single Regressor: Hypothesis Tests and Confidence Intervals	Week of May 27
Readings:	SW Chapter 5. Online content	
Assignments:	Assignment due on Sunday, Jun 02 at 11.59 PM ET Reading Ahead: Lecture 6 - Online content	
	*May 27, Memorial Day Holiday, Classes Suspended	
Assessments:	*May 31Substitute Monday Schedule of Classes	

Session 5 Study Guide

Topics:	Lecture 6: Linear Regression with Multiple Regressors	Week of May 27
Readings:	SW Chapter 6 Online content	
Assignments:	Assignment due on Sunday, Jun 02 at 11.59 PM ET Reading Ahead: Lecture 7 - Online content	
Assessments:		

Session 6 Study Guide

Topics:	Lecture 7: Hypothesis Tests and Confidence Intervals in Multiple Regression	Week of Jun 03
Readings:	SW Chapter 7 Online content	
Assignments:	Assignment due on Sunday, Jun 09 at 11.59 PM ET Reading Ahead: Lecture 8 - Online content	
Assessments:	TBA	

Session 5 Study Guide

Topics:	TBA	Week of Jun 03
Readings:		
Assignments:	Reading Ahead: Lecture 8 - Online content	
Assessments:		

Session 9 Study Guide

Topics:	Lecture 8: Nonlinear Regression Functions	Week of Jun 10

Readings:	SW Chapter 8 Online content	
Assignments:	Reading Ahead: Lecture 9 - Online content Assignment due on Sunday, Jun 16 at 11.59 PM ET	
Assessments:	TBA	

Session 10 Study Guide

Topics:	Lecture 9: Regression with a Binary Dependent Variable	Week of June 10
14Readings:	SW Chapter 11 Online content	
Assignments:	Assignment due on Sunday, Jun 16 at 11.59 PM ET Reading Ahead: Lecture 10 - Online content	
Assessments:	TBA	

Session 11 Study Guide

Topics:	Lecture 10: Introduction to Time Series Regression and Forecasting	Week of June 17
Readings:	SW Chapter 14 Online content	
Assignments:	Assignment due on Sunday, Jun 23 at 11.59 PM ET Reading Ahead: Lecture 11 - Online content	
Assessments:	TBA	

Session 12 Study Guide

Topics:	Lecture 11: Additional Topics in Time Series Regression	Week of Jun 17
Readings:	SW Chapter 16	

	Online content	
Assignments:	Assignment due on Sunday, Jun 23 at 11.59 PM ET	
Assessments:	TBA.	

Session 13 Study Guide

Topics:	Other topics: Review Session Final Examination	Week of June 24
Readings:		
Assignments:		
Assessments:	TBA.	

Session 14 Study Guide

Topics:	Final Examination (In classroom)	Wed, June 26
Readings:		
Assignments:	**Term Paper Due on Wed June 26, at 11.59 PM ET via Blackboard**	

4.4   Course Grading

This is a Boston University course; that means something. One thing it means is that we recognize and reward excellence. Excellence is uncommon, even rare. Your grade, then, will reflect the standards of excellence set by Boston University, in which only truly distinguished work will receive the highest grade.

I strongly encourage student participation and contribution during the lectures. Use this opportunity to distinguish yourself from others and benefit from personalized studying, learning, and teaching experience.

Course grades will be a combination of weekly assignments, quizzes, weekly discussions, the term paper, the midterm and the final exam, weighted as follows:

A: Assignments, quizzes and discussions:		**30%**
B: Midterm:		**25%**
C: Term Paper:		**15%**
D: Final Exam		**30%**

4.5 Assigned Problems, quizzes, and Discussions

Each week students will be assigned problems and questions relevant to the weekly material. You need to solve these problems, answer the questions, and be ready to either explain them during the lectures or ask questions if clarification is needed.

5. Requirements, Policies and Standards

5.1. Weekly Assignments

Assignments, quizzes and discussions will serve as resource for the midterm and final exam preparation. There will be clearly specified deadlines for the assignments, quizzes, etc and it is extremely important to complete the assignments BEFORE THE DEADLINE. After the deadline, the solutions will be released and you will not have an opportunity to complete them once the deadline has passed.

5.2. Timely Presentation of Materials Due

All assignments and assessments have due dates. These are the LAST DATES that stated material is due. I maintain the right to refuse, or downgrade any materials presented after due dates. This is not a subject for discussion.

Student should organize their time and work so as to turn in the assignment before the due date. To be absolutely clear, this means that the work will be accepted anytime up to that date but not after. Students should develop a schedule so that the work is built around their personal needs and obligations. Students should allow for contingencies and plan to hand in their work well before the last minute. That way, should some unforeseen problem arise, the timely presentation of work is not in jeopardy.

5.3. Discussion Expectations

Please remember that your participation in weekly lectures discussions is essential.

5.4. Student Preparation

Minimal preparation is reading the material, and being able to summarize what it is about, what the major issues are, and offer some recommendations.

Superior preparation involves being able to (i) summarize the situation or problem presented; (ii) recommend a solution to the discussed problem; (iii) support your recommendation with relevant details, and analyses; and (iv) discuss innovative solutions.

5.5.   Project Requirements

You are to complete any project or assignment on your own.

5.6.   Grading Policy

Grade inflation is not in the best interests of BU students or the reputation of the institution. I have a responsibility to differentiate the performance of my students, and to reward with high grades only those who do exceptionally well. A Grade of 'A' or 'A minus' will be limited only to those students truly distinguishing themselves in the course.

The Academic Policy Committee of Metropolitan College recommends the following guidelines for distinguishing grades.

A, A-	20%
B+, B, B-	80%
Other	As merited

Excellent work will be rewarded with an 'A'. An 'A' grade requires quality excellence in <u>all</u> aspects of the course: quizzes, discussions, project, and exam. Grades will be curved.

5.7.   Requests for Extensions

The General position is that make up extensions are not given**.** There is no guarantee that a make-up will be permitted, and any request needs to be in writing and a written verification of the incident will be expected. Sometimes, unfortunate situations occur that make fulfilling requirements impossible and, as such, requests for extensions will be evaluated on a case-by-case basis. This is not to penalize any individual student but to attempt to assure that there is a level playing field and the total class feels confident that no one has a unique advantage. If, for any reason, you are unable to meet any assignment deadline, a student should contact the instructor immediately and preferably in advance. All assignments must be completed.

5.8.   Off-Syllabus Work

Students will not be allowed to submit work for consideration that is beyond that defined in the syllabus. **Students will not be allowed to submit extra work to improve their grade as this will be unfair to other students.**

6.   Academic Conduct Policy

The academic conduct policy is summarized below. For the full text of the academic conduct code, please go to:

http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html

Any Plagiarism will be reported to the Dean and dealt with according to the Academic Conduct Code of Metropolitan College.

Boston University makes available to all faculty the plagiarism tool "TurnItIn.com." The site contains millions of papers from around the world. When a paper is submitted to TurnItIn.com, it is analyzed and compared to other work. TurnItIn.com reports if any parts of the paper are copied from other sources without proper attribution. Specifically, TurnItIn.com will detect plagiarism.

6.1 A Definition of Plagiarism

"The academic counterpart of the bank embezzler and of the manufacturer who mislabels products is the plagiarist: the student or scholar who leads readers to believe that what they are reading is the original work of the writer when it is not. If it could be assumed that the distinction between plagiarism and honest use of sources is perfectly clear in everyone's mind, there would be no need for the explanation that follows; merely the warning with which this definition concludes would be enough. But it is apparent that sometimes people of goodwill draw the suspicion of guilt upon themselves (and, indeed, are guilty) simply because they are not aware of the illegitimacy of certain kinds of "borrowing" and of the procedures for correct identification of materials other than those gained through independent research and reflection."

"The spectrum is a wide one. At one end there is a word-for-word copying of another's writing without enclosing the copied passage in quotation marks and identifying it in a footnote, both of which are necessary. (This includes, of course, the copying of all or any part of another student's paper.) It hardly seems possible that anyone of college age or more could do that without clear intent to deceive. At the other end there is the almost casual slipping in of a particularly apt term which one has come across in reading and which so aptly expresses one's opinion that one is tempted to make it personal property."

"Between these poles there are degrees and degrees, but they may be roughly placed in two groups. Close to outright and blatant deceit-but more the result, perhaps, of laziness than of bad intent-is the patching together of random jottings made in the course of reading, generally without careful identification of their source, and then woven into the text, so that the result is a mosaic of other people's ideas and words, the writer's sole contribution being the cement to hold the pieces together. Indicative of more effort and, for that reason, somewhat closer to honest, though still dishonest, is the paraphrase, and abbreviated (and often skillfully prepared) restatement of someone else's analysis or conclusion, without acknowledgment that another person's text has been the basis for the recapitulation."

The above paragraphs are from H. Martin and R. Ohmann, The Logic and Rhetoric of Exposition, Revised Edition. Copyright 1963, Holt, Rinehart & Winston.

6.2 Academic Conduct Code

I. Philosophy of Discipline

The objective of Metropolitan College in enforcing academic rules is to promote the kind of community atmosphere in which learning can best take place. This atmosphere can be maintained only so long as every student believes that his or her academic competence is being judged fairly and that he or she will not be put at a disadvantage because of the dishonesty of someone else. Penalties imposed should be carefully determined so as to be no more or no less than required to

maintain the desired atmosphere. In defining violation of this code the intent is to protect the integrity of the educational process.

II. Academic Misconduct

Academic misconduct is conduct by which a student misrepresents his or her academic accomplishments or impedes other students' chances of being judged fairly for their academic work. Knowingly allowing others to represent your work as theirs is as serious an offense as submitting another's work as your own.

III. Violations of this Code

Violations of this code are acts that constitute an attempt to be dishonest or deceptive in the performance of academic work in or out of the classroom. To alter academic records, or to collaborate with another student or students in an act of academic misconduct. Violations include but are not limited to:

A. Cheating on examinations. Any attempt by a student to alter his or her performance on an examination in violation of that examination's stated or commonly understood ground rules.

B. Plagiarism. Any attempt by a student to represent the work of another as his or her own. Plagiarism includes each of the following: copying the answers of another student on an examination, copying or substantially restating the work of another person or persons in any oral or written work without citing the appropriate source, and collaboration with someone else in an academic endeavor without acknowledging his or her contribution (see above for a more detailed definition of plagiarism).

C. Misrepresentation or falsification of data presented for surveys, experiments, etc.

D. Theft of an examination. Stealing or otherwise discovering and/or making known to others the contents of an examination that has not yet been administered.

E. Unauthorized conversation is not allowed during examinations. Any unauthorized conversation may be considered prima facie evidence of cheating.

F. Knowingly allowing another student to represent your work as his or her own.

G. Forgery, alteration, or knowing misuse of graded examinations, grade lists, or official University records or documents, including but not limited to transcripts, letters of recommendation, degree certificates, alteration of examinations or other work after submission.

H. Theft or destruction of examinations or papers after submission including purposefully altering possible poor performance.

I. Submitting the same work in more than one course without the consent of the instructors involved.

J. Altering or destroying another student's work or records, altering records of any kind, removing materials from libraries or offices without consent, or in any way interfering with the work of others so as to impede their academic performance.

K. Failure to comply with the sanctions imposed under the authority of this code.

Important Dates

Summer Session I 2019
May 21   Classes Begin
May 27   Memorial Day Holiday, Classes Suspended
May 31   Substitute Monday Schedule of Classes
June 28   Last Day of Classes