

University of Colorado - Department of Economics - Fall 2013  
ECON 4858 Financial Econometrics  
Professor Carlos Martins-Filho

Office. Economics Building 105.

Meetings. Tuesdays and Thursdays 9:30 AM - 10:45 AM in GUGG 205.

Office hours. Tuesdays 3:30 PM - 5:30 PM and by appointment. For appointment send an email to [carlos.martins@colorado.edu](mailto:carlos.martins@colorado.edu).

Prerequisites. Successful completion of ECON 3818 or equivalent is a required pre-requisite. ECON 4818 is desirable but by no means necessary.

Objectives. Introduce statistical models, estimation and testing procedures used in analyzing financial data.

Class URL. [http://spot.colorado.edu/~martinsc/ECON\\_4858.html](http://spot.colorado.edu/~martinsc/ECON_4858.html).

Grades. Grades (A-F) will be based on the following:

- There will be five sets of homework questions whose answers will be graded. Each set accounts for 8 percent of your course grade. Some of these questions will involve the use of MATLAB, a software that is freely available on campus.
- There will be one midterm examination. It accounts for 30 percent of your course grade.
- There will be a final examination. It accounts for 30 percent of your course grade.

Dates for the examinations:

Examination	Date and Time
Midterm	October 17, in class
Final Examination	December 16, 1:30 PM - 4:00 PM

Homework sets will be available on the class web site with their respective due dates.

#### Textbook.

1. Ruppert, D., 2004, *Statistics and Finance: An Introduction*. Springer, New York.

#### Additional.

1. Bernstein, P., 2005, *Capital Ideas: The Improbable Origins of Modern Wall Street*. John Wiley and Sons, New York.

This book gives an informal and historical account of the development of many of the models we treat in class. Great reading for all students in this course.

2. Lai, T. L., and Peng, H., 2008, *Statistical Models and Methods for Financial Markets*. Springer, New York.

3. Ruppert, D., 2011, *Statistics and Data Analysis for Financial Engineering*. Springer, New York.

These books contain much of the material in our textbook. In many instances, however, the treatment is more advanced.

4.

6. The capital asset pricing model
  - Capital market line, security market line
  - Security characteristic line
  - Using CAPM in portfolio analysis
  - Factor models
7. Fixed income securities
  - Zero-coupon bonds, coupon bonds
  - Yield to maturity
  - Term structure
  - Continuous compounding
  - Continuous forward rates
  - Sensitivity of price to yield
8. GARCH Models
9. Value-at-Risk
  - One asset
  - Portfolio
10. Options pricing
  - Call options
  - The law of one price
  - Pricing calls
  - Martingales
  - The Black-Scholes model, formula and its use
  - Puts
  - Evolution of option prices
  - Leverage of options and hedging

**Important information.**

- If you qualify for accommodations because of a disability, please submit a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu).  
If you have a temporary medical condition or injury, see Temporary Medical Conditions: Injuries, Surgeries, and Illnesses guidelines under Quick Links at Disability Services website and discuss your needs with me.

- Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled