Course Information *(subject to change)*

Course Description: This course is an applied statistical course that emphasizes on implementing financial and economic models with real data. See the list of topics below. Using the software in particular R for computation and analysis is essential.

Though this is not a theoretical course, all the background material including those of Finance, Economics and Statistics will be provided and discussed.

Learning Outcomes: By the end of this course, students will have sounding knowledge about statistical application in finance and econometrics. They will be proficient in R, such as obtaining the most updated data, analyzing these data and model these data with financial and econometric models. More importantly, student will be able to write professional analytical report and presentation.

Textbook: You are not obliged to buy text book, I will teach from my handouts posted on eCampus. Some references:


Prerequisite: STAT 610-611 or STAT 630

Knowledge of vectors and matrices; probability, distributions and moments; maximum likelihood and (generalized) least squares estimation; confidence intervals, hypothesis tests and linear regressions.

Computing: R, a free software environment for statistical computing and graphic ([http://www.r-project.org/](http://www.r-project.org/))

Topics:

- Returns
- Fixed Income Securities
- Exploratory Data Analysis
- Modeling Univariate Distributions
- Multivariate Statistical Models
- Modeling Dependence using Copulas
- Portfolios
- CAPM
- Factor Models and Principal Components
- Risk Management
- Times Series Models:
- GARCH Models
- Cointegration
- Option pricing