Time series

Course title – Intitulé du cours	Time series
Level / Semester – Niveau /semestre	M1 / S2
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Kim Jihyun
Other teacher(s) – Autre(s) enseignant(s)	
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Other teacher(s) – Autre(s) enseignant(s)	
Lecture Hours – Volume Horaire CM	30
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	Anglais
TA and/or TP Language – Langue des TD et/ou TP	Anglais

Teaching staff contacts – Coordonnées de l'équipe pédagogique :
Email: jihyun.kim@tse-fr.eu
Office: TBA
Office hours: Monday, 14:00-16:00
Preferred Means of Interaction: After the classes, prior appointment

Course Objectives – Objectifs du cours :
This course will cover the statistical and econometric techniques needed to conduct quantitative research in the estimation of time series models, forecasting of financial markets, and the modelling of asset price volatility. This knowledge will enable students to understand and interpret empirical findings in financial markets. On completing this course, the students will understand the central technical issues in the statistical analysis of financial time series. They will be comfortable with the use of standard econometric software such as EVIEWS, R, STATA, and MATLAB to undertake their own research.

Prerequisites – Pré requis :
All students are expected to have taken an econometrics course and an introductory statistics course. For those of you who are already familiar with a statistical software package (EVIEWS, STATA, R, MATLAB, GAUSS, etc.), you are welcome to continue using it.

Grading system – Modalités d'évaluation :
There will be two problem sets and a midterm and a final exam. The grading breakdown is as follows:
Assignments: 20%
Midterm: 40%
Final Exam: 40%

Bibliography/references – Bibliographie/références :

The primary reference for the course is:

1. Tsay, Ruey S.   (2010) Analysis of Financial Time Series, 3th ed., John Wiley & Sons
2. James D. Hamilton (1994) Time Series Analysis, Princeton.

Session planning – Planification des séances :

1. Stationarity and Nonstationarity

2. Stationary Process (AR, MA, ARMA)

3. Nonstationary Process

4. Regressions with Financial Time Series

5. Forecasting

6. Conditional Heteroskedasticity

7. Vector Autoregressive (VAR) Model

8. Factor Models

Distance learning – Enseignement à distance :

Recorded lectures (videos)
MCQ tests and other online exercises and assignments