

# FORECASTING TIME SERIES

## Homework 1

(prepared by Lorenzo Pascual)

Answer by groups to the following questions in a very concise and clear way (summarize all the answers in a table like the one used in class and any additional explanation below the summary table).

Send your answers in a “Word file” to [lpascual@faculty.ie.edu](mailto:lpascual@faculty.ie.edu) until midnight on Friday, February 1<sup>st</sup>.

For the seven time series data available in file Homework\_1\_DATA.csv, please respond to the following questions:

1. Plot the series, its correlogram and its histogram.
2. Using the information in the previous plots, discuss whether:
  - a. The series is stationary
  - b. The series has a marginal Normal distribution
  - c. The series is white noise, strict white noise or Gaussian white noise
  - d. The dynamic dependence of the series can be represented by a linear model
  - e. There are potential non-linear dependences
3. For the non-stationary time series, justify the proper transformation to stationarity, and respond the same questions in 2 for the transformed stationary data.
4. Finally, justify again your previous answers using basic statistics and formal tests when available.