Alice sighed wearily. ‘I think you might do something better with the time,’ she said, ‘than waste it in asking riddles that have no answers.’

‘If you knew Time as well as I do,’ said the Hatter, ‘you wouldn’t talk about wasting IT. It’s HIM.’

‘I don’t know what you mean,’ said Alice.

‘Of course you don’t!’ the Hatter said, tossing his head contemptuously. ‘I dare say you never even spoke to Time!’

‘Perhaps not,’ Alice cautiously replied: ‘but I know I have to beat time when I learn music.’

‘Ah! that accounts for it,’ said the Hatter. ‘He won’t stand beating.’

Lewis Carroll, *Alice’s Adventures in Wonderland*
Outline

1. Syllabus
2. Time Series Examples
3. Objectives of TSA
4. Homework 1a
<table>
<thead>
<tr>
<th></th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Syllabus</td>
</tr>
<tr>
<td>2</td>
<td>Time Series Examples</td>
</tr>
<tr>
<td>3</td>
<td>Objectives of TSA</td>
</tr>
<tr>
<td>4</td>
<td>Homework 1a</td>
</tr>
</tbody>
</table>
Syllabus

- **Instructor:** Arthur Berg
  
  always be available right after class and during office hours

  - **Email:** berg@ufl.edu
    
    *Please include “STA 6857” in the subject line.*

  - **Office:** 408 McCarty Hall C
    
    *Office hours are Mondays 5:00–6:00pm and Wednesdays 2:00–3:00pm*

- **Class Info**

  - Section #6084, MWF, 12:50–1:40 pm (period 6), FLO 230

- **Class Webpage**

  - http://www.stat.ufl.edu/~berg/sta6857
Textbook

*Time Series Analysis and Its Applications: With R Examples*


References

Syllabus III

- **Prerequisites**
  STA 4322 (an introductory statistics course) and a basic computer language are the prerequisites.

- **Topics Covered**
  We will (try to) go over most of the textbook. This includes the following topics:
  - Characteristics of Time Series
  - Time Series Regression and Exploratory Data Analysis
  - ARIMA Models
  - Spectral Analysis and Filtering
  - Additional Time Domain Topics
  - State-Space Models
  - Methods in the Frequency Domain

- **Software**
  We will be using the free, yet powerful, statistics software package R. R will be used in your homework and in the lectures, and you will be tested on R’s commands and output at the end of the class.
Syllabus IV

- **Grading Policy**
  - Midterm 35%  
    - A 90%—100%  
    - B+ 85%—90%  
  - Homework 35%  
    - B 80%—85%  
    - C+ 75%—80%  
  - Final Project 20%  
    - B 80%—85%  
    - D 60%—70%  
  - R Test 10%  
    - C+ 75%—80%  
    - E <60%

- **Changes to the Syllabus**
  I reserve the right to change the syllabus as circumstances necessitate, but no new policy will be enforceable until after you have been notified in class.
Definition (Time Series)

A time series is a collection of observations made sequentially through time.
Economic and Financial Data

- share prices
- export totals
- average income
- company profits
Physical Data

- rainfall
- air temperature
- seismic activity
Marketing Data

- sales figures
- monetary receipts
- advertising costs
Demographic Data

- population totals
- birth counts
Description

- trend
- seasonal effects
- heteroscedasticity
- spectral density
Explanation

input ➔ ??? ➔ output
Prediction/Forecasting

Time series evolution: an example

Cumulative output vs time (days)
Control

![Control Chart Example]

- **UCL = 10.860**
- **Center line =**
- **LCL = 9.256**

**Quality characteristic**

Sample

3  6  9  12  15
Read the following sections from the textbook

- §1.1 (Introduction)
- §1.2 (The Nature of Time Series Data)
Install R!

Install the latest version of R (version 2.5.1) on your computer. Then execute the commands below and paste the output into a Word (or equivalent) document. Give a printout of the word document with the rest of homework 1 (assigned later).

Example Output:

```r
> version
platform i386-pc-mingw32
arch i386
os mingw32
system i386, mingw32
> version
status
> memory.size()
status
> memory.limit()
status
> demo(graphics)
status
> demo(persp)
status
version.string R version 2.5.1 (2007-06-27)
```