TS Module 6 Stationary autoregressive processes

(The attached PDF file has better formatting.)

- Autoregressive processes
- Autocorrelation functions

Read Section 4.2, “Autoregressive processes,” on pages 66-70. Know equations 4.3.1 through 4.3.6 on pages 66 and 67. These equations are simple, but you need them for the mixed autoregressive moving average processes. The time series textbook builds rapidly. The first modules are easy, and if you understand the relations, the later modules are clear. If the skip the concepts in the early modules, the later modules are difficult.

Read the two short sections:

- “The general linear process for the AR(1) model” on pages 70-71.
- “Stationarity of an AR(1) process” on page 71.

Know equations 4.3.7 and 4.3.8 on page 70. These equations restate the results from the previous sub-section.

Read from “Second-order autoregressive process” on pages 71 through the middle of page 73, stopping after equation 4.3.15. You are not responsible for the material from “Although Equation (4.3.13) … through the end of the page.”

Review Exhibit 4.18 on page 74. The final exam gives autocorrelations at various lags and asks what type of ARMA or ARIMA process might cause them.

Read “Variance of the AR(2) model” on page 75. You need not memorize equations 4.3.19 and 4.3.20. An exam problem asking for the variance will give the equation.

Read “The ψ-coefficients of the AR(2) Model” on page 75, stopping after the explanation of equation 4.3.21. You are not responsible for the last three equations on the page, starting from “One can also show that …” until the end of the page.

Read “General autoregressive process” on pages 76-77. You use Yule-Walker equations for the student project. The final exam has simple problems using Yule-Walker equations.

The rest of the textbook builds on the concepts in the early modules. We combine moving average and autoregressive processes, with seasonality and differences (integration).