

OCP6168 DATA ANALYSIS TECHNIQUES FOR COASTAL AND OCEAN ENGINEERS

Class Tuesday 8-9 (3:00 PM), Thursday 9 (4:05) Weil 279
Instructor Alex Sheremet, 352-392-9537 ext. 1429, alex@coastal.ufl.edu

SOME TEXTS

Papoulis, A., *Probability, Random Variables and Stochastic Processes*, McGraw-Hill (3rd Edition), 1991.

Priestley, M. B., *Spectral Analysis and Time Series, Vol. 1: Univariate Series; Vol. 2: Multivariate Series, Prediction and Control*. Academic Press, 1996 (9th printing).

Other texts will be referenced as they are used.

COMPUTER APPLICATIONS

Matlab User Guides, Matlab Version 7, The Mathworks, www.mathworks.com.

“File exchange” page on Matlab Central web site, for various matlab routines

www.mathworks.com/matlabcentral/fileexchange/

NOTE: Other texts will be used, which will be cited as needed. For current and previous classes, copies of course notes, some texts and Matlab application code will be made available.

OUTLINE

Section 1. Basic concepts. Deterministic and random data. Probability, Random variables.

Section 2. Stochastic processes. Fourier series and transforms. Windows. Smoothing. Filters. Stationarity.

Section 3. Practical spectral analysis. Spectral analysis of time series. Methods for estimating power spectra.

*Section 4. Special topics*¹. Nonlinear time series, higher order spectral analysis. Short time series analysis.

GRADING

10%	Class participation.
70%	Homework.
30%	Term paper.

¹As allowed by schedule.