Preliminary (11.8) lecture plan for TTT4120 fall 2018

Lecture plan for Proakis & Manolakis, Digital Signal Processing, **4th edition**, Prentice-Hall, 2007

Week	Day	Topic	In the textbook	Exercise deadline
34	Wed	Introduction to digital signal processing Time-discrete signals in time domain	1.1, 1.2, 1.4.1 2.1, 1.3	
	Thu	Time-discrete systems in time domain	2.2, 2.3, 2.4.1, 2.4.2, 2.5.1	
35	Wed	Time-discrete systems in time domain Time-discrete signals and systems in frequency domain. The discrete time Fourier transform (DTFT)	4.2.1, 4.2.3, 4.3, 4.4, 5.1.1, 5.1.4, 5.4.1	
	Thu	More on DTFT. Laplace transform (analogue systems)	Lecture notes	
36	Wed	z-transform (analysis of digital systems)	3.1, 3.2, 3.3	
	Thu	z-transform (analysis of digital systems) Relationship between H(ω) and poles and zeros	4.2.6, 3.5.3, 3.5.6 5.2.2	1 (7.9)
37	Wed	Properties of some simple filter types Linear phase response and group delay Minimum phase and inverse systems	5.4.2-5.4.6 5.4.1, 10.2.1 5.5	
	Thu	Correlation and energy spectral density	2.6.1, 2.6.2, 2.6.4, 4.2.5, 5.3.1	2 (14.9)
38	Wed	Inverse z-transform and residuals	3.4	
	Thu	The sampling theorem	1.4.2, 1.4.6, 6.1	3 (21.9)
39	Wed	Sampling in frequency domain, DFT DFT properties	7.1.1, 7.1.2 7.2 (main points)	
	Thu	Use of DFT in filtering Use of DFT in frequency analysis	7.3.1, 7.3.2 7.4	4 (28.9)
40	Wed	FFT - efficient computation of DFT	8.1.1, 8.1.3	
	Thu	Characterization of stochastic processes	1.2.4,12.1, lecture notes	
41	Wed	Characterization and filtering of stochastic processes	12.1, lecture notes 5.3	
	Thu	Filtering of stochastic processes Estimation : general theory, mean value	5.3 12.1, lecture notes	5 (12.9)
42	Wed	Estimation : autocorrelation, power spectrum, non-parametric spectral estimation.	12.1, 14.1.2, 14.1.3, 14.2.1	
	Thu	Modeling stochastic processes Parametric spectral estimation	12.2 14.3	6 (19.10)
43	Wed	More on parametric spectral estimation	14.3 (start to 14.3.3), 14.3.6	
	Thu	Linear prediction	12.3.1, 12.3.4	7 (26.10)
44	Wed	Design of FIR- and IIR-filters	10.2.2, 10.2.4 (main idea)	
	Thu	Design of IIR-filters Wiener-filtering	10.3.3-10.3.4 12.7.1	8 (2.11)
45	Wed	Wiener-filtering	12.7.3, 12.7.4	
	Thu	Filter implementation	9.1-9.3,1.4.3, 6.3.3, 9.4.1, 9.4.3	
46	Wed	Filter implementation	9.6.2, 9.6.3	
	Thu	Guest lecture	"Medical Signal Processing", Prof. Hans Torp	9 (16.11)
47	Wed	Multirate signal processing	11.1-11.3	
	Thu	Multirate signal processing Summary	11.4, 11.6	10 (24.11)
48				11 (28.11)