

ECE355 Cheatsheet

Hanhee Lee

August 30, 2024

Contents

1	Continuous and discrete-time signals (Ch. 1.1)	3
2	Time dilation, shifting	3
3	Complex exponential signals (Ch. 1.3)	3
4	Step and impulse functions (Ch. 1.4)	3
5	General systems and basic properties (Ch. 1.6)	3
6	Impulse response (Ch. 2.1)	3
7	Convolution in discrete time (Ch. 2.1)	3
8	Convolution in continuous time (Ch. 2.2)	3
9	Properties of LTI systems (Ch. 2.3)	3
10	Periodic signals and Fourier series	3
11	Properties of Fourier series	3
12	Response of LTI systems to periodic signals	3
13	Aperiodic signals and Fourier transform	3
14	Fourier transform properties; time-frequency duality	3
15	Bandlimited signals	3
16	The sampling theorem (Ch. 7.1)	3
17	Reconstruction (Ch. 7.2)	3
18	Amplitude modulation systems	3
19	Envelope detection, coherent detection	3
20	Single-sideband modulation	3
21	Angle modulation	3
22	Concepts of digital communication	3

List of Figures

List of Tables

Signals and General Systems

- 1 Continuous and discrete-time signals (Ch. 1.1)
- 2 Time dilation, shifting
- 3 Complex exponential signals (Ch. 1.3)
- 4 Step and impulse functions (Ch. 1.4)
- 5 General systems and basic properties (Ch. 1.6)

Linear Time-Invariant Systems

- 6 Impulse response (Ch. 2.1)
- 7 Convolution in discrete time (Ch. 2.1)
- 8 Convolution in continuous time (Ch. 2.2)
- 9 Properties of LTI systems (Ch. 2.3)

Fourier Series and Fourier Transform Representations

- 10 Periodic signals and Fourier series
- 11 Properties of Fourier series
- 12 Response of LTI systems to periodic signals
- 13 Aperiodic signals and Fourier transform
- 14 Fourier transform properties; time-frequency duality

Sampling

- 15 Bandlimited signals
- 16 The sampling theorem (Ch. 7.1)
- 17 Reconstruction (Ch. 7.2)

Communication Systems

- 18 Amplitude modulation systems
- 19 Envelope detection, coherent detection
- 20 Single-sideband modulation
- 21 Angle modulation
- 22 Concepts of digital communication