

Tentative Course Syllabus (2021)

Week		1. Haykin	2. Couch	3. (EE435-436) Proakis & Salehi	4. Stark & Woods	5. Papoulis	6. (EE230) Bertsekas & Tsitsiklis	7. Hayes
1-3	Review of the Theory of Random Variables and Random Vectors	Appendix 1	App. B	Sec. 5.1	Ch. 1 - Ch. 4	Ch. 1 - Ch. 5	Ch. 1 - Ch. 4 Sec. 5.4	Sec.3.1, 3.2
4-5	Random Processes and Correlation Functions	Sec. 1.1, 1.2, 1.4	Sec. 6.1	Sec. 5.2.1	Sec. 7.1	Sec. 10.1		Sec.3.3
5	Stationarity and Ergodicity	Sec. 1.3, 1.5	Sec. 6.1, 6.3	Sec. 5.2.2, 5.2.3	Sec. 7.4, 8.4	Sec. 10.1, 13.1		Sec.3.3
6	Review of Fourier Transforms	Appendix 2, A2.1	Sec. 2.5	Sec. 2.2, 2.3				Sec.2.2
6-7	Power Spectrum for WSS Signals	Sec. 1.7	Sec. 6.2	Sec. 5.2.5, 5.2.6	Sec. 7.5	Sec. 10.3		Sec.3.3
7-8	LTI Systems with Random Inputs	Sec. 1.6	Sec. 6.4	Sec. 5.2.4, 5.2.5	Sec. 7.3, 7.5	Sec. 10.2, 10.4		Sec.3.4
8-9	Gaussian, Bernoulli and Poisson Processes	Sec. 1.8	Sec. 6.6	Sec. 5.3.1	Sec. 7.2		Chapter 6	Sec.3.3
9-10	Noise (White, Thermal, Shot)	Sec. 1.9	Sec. 6.2	Sec. 5.3.2	Sec. 7.5	Sec. 11.1, 11.2		Sec.3.3
10-11	Bandlimited White Noise	Sec. 1.9		Sec. 5.3.3		Sec. 11.5		
12	Hilbert Transforms & Bandpass Signals (SSB example)	Appendix A2.3, A2.4	Sec. 6.7	Sec. 2.6, 2.7, 3.2.3	Sec. 8.6	Sec 10.3, 11.3		
13-14	Narrowband Noise	Sec. 1.10, 1.11, 1.12	Sec. 6.7	Sec. 5.3.3				

References

1. **Simon Haykin**, "Communication Systems", 4th edition, 2001.
2. **Leon W. Couch, II**, "Digital and Analog Communication Systems", 7th edition, Prentice Hall.
3. **John G. Proakis & Masoud Salehi**, "Fundamentals of Communication Systems", 2nd edition, 2014. (Textbook of EE435-EE436)
4. **Henry Stark & John W. Woods**, "Probability, Random Processes with Applications to Signal Processing", 3rd edition.
5. **Athanasios Papoulis**, "Probability, Random Variables and Stochastic Processes", 3rd edition, 1991.
6. **Dimitri P. Bertsekas & John N. Tsitsiklis**, "Introduction to Probability", 2nd edition. (Textbook of EE230)
7. **Monson H. Hayes**, "Statistical Digital Signal Processing and Modeling", 1996.

Course Instructors

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- Each instructor will teach all the students for 4-5 weeks.
- Supplementary questions will be assigned but not collected. You can discuss your “worked-out” and “educated” questions with the course instructors.

Tentative Grading

4 Quiz 20%
2 Midterms 50%
Final 30%