

EE 115: Introduction to Communication Systems

Course Outline

- 1) Instructor: Yingbo Hua, yhua@ucr.edu. **in-person or hybrid Office Hour:** Fridays 2pm-3pm, WCH432.
- 2) TA: Hassan Rizwan, hassan.rizwan@email.ucr.edu
- 3) Lecture Hours: Wednesdays and Fridays, 9:30am - 10:50am, **in-person**, Watkins Hall 1101.
- 4) Lab Hours: Thursdays 11am - 1:50pm; 2pm - 4:50pm **in-person or hybrid**, WCH128.
- 5) Midterm Exam Date (tentative): Thursday, Nov 7, 2023
- 6) Final Exam: Thursday, December 9, 7:00 p.m. - 10:00 p.m
- 7) Description from UCR Catalog: 4 Units; Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 110A or EE 111. Covers spectral density and correlation, modulation theory, amplitude, frequency, phase and analog pulse modulation and demodulation techniques, signal-to-noise ratios, and system performance calculations. Laboratory experiments involve techniques of modulation and demodulation.
- 8) Textbook: Upamanyu Madhow, Introduction to Communication Systems, Cambridge University Press, 2014.
- 9) Lecture Notes: To be provided and posted on Canvas
- 10) Homework and Lab Assignments: To be provided and posted on Canvas
- 11) Course Assessment: **HW 20% + Lab 20% + Midterm 20% + Final 40%**. For each homework assignment, midterm and final, the weight (in percentage) of each question will be provided. Each homework assignment will be due **within a week**.
- 12) For midterm and final exams, “**cheat sheets**” of no more than 2 pages are allowed, but **no electronics** (including computers, phones and calculators) are allowed.
- 13) Course Objectives:
 - a) Meaning of bandwidth, amplitude modulation, frequency and phase modulation.
 - b) Frequency spectrum of a power signal.
 - c) Modulators and demodulators for amplitude-modulated and DSB-SC signals.
 - d) Modulators and demodulators for phase-modulated and frequency-modulated signals.
 - e) Use of Matlab for testing aspects of communication systems.
- 14) Please review **Academic Integrity Policies & Procedures** at <https://conduct.ucr.edu/policies/academic-integrity-policies-and-procedures>

15) Additional Information:

- Student Disability Resource Center (SDRC) at <https://sdrc.ucr.edu/>
- Office of Civil Rights at <https://titleix.ucr.edu/>
- Counseling & Psychological Services at <https://counseling.ucr.edu/>
- Academic Resource Center at <https://arc.ucr.edu/>