Communication Systems

ECE 151 - Summer 2021

Lecture: Monday and Wednesday 9:00 a.m.-12:30 p.m.
location: online.

Instructor: Hamid R. Sadjadpour, BE2-245B, Email: hamid@soe.ucsc.edu,
Phone: (831)459-1483.

Grader: Masoumeh Ghanbarpour, Email: maghanba@ucsc.edu

TA:
Xiangjian Gao, Email: xgao41@ucsc.edu

Office hours: Monday 2:00 p.m. - 4:00 p.m. & Thursday 9:00 am - 11:00 am
The zoom link is the same as class zoom link.

Any question regarding the homeworks, should be directed to the grader.

Instructor Office Hours: During lecture and by appointment.

Textbooks:
Simon Haykin, Michael Moher, Introduction to Analog and Digital Communications,
Second edition, John Wiley Publisher.

Homeworks (10%):
Problems will be given at the end of each chapter. Late homework will not be accepted.
Exams (Midterm 30%, Final 60%):

Midterm Exam: 8/11/2021 during the class schedule.

Final Exam: Last lecture.

No make-up exam under any circumstances. Exams most likely are open book.

Course Outline:

- Amplitude Modulation: DSB-SC, SSB, DSB, QAM, VSB, receiver design, Chapter 3
- Angle Modulation: FM and PM relationship, FM narrowband and wideband modulation, FM demodulation and receiver, Chapter 4
- Pulse Modulation: PAM, PPM, PCM, Delta modulation, DPCM, Line codes, Chapter 5
- Baseband Data Transmission: ISI, Nyquist channel, Raised-Cosine Pulse Spectrum, M-ary data transmission, Eye pattern, Chapter 6
- Digital Band-Pass Modulation: ASK, PSK, FSK, DPSK, non-coherent modulation, M-ary modulation, Chapter 7
- Noise in Digital Communications, Chapter 10.

Final exam will cover the entire course.

We may not be able to teach all sections of these chapters.

The exams will be based on class materials and homeworks. You must pass the Final exam in order to pass the course.

Announcements:

- The prerequisite for this course is ECE 103, Signal and Systems and CSE 107. It is strongly recommended that all students review Fourier Transform topic.
- If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to me in person outside of class (e.g., office hours) within the first two weeks of the quarter. Contact the DRC at 459-2089 (voice), 459-4806 (TTY), or
UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089, or by email at drc@ucsc.edu.

Recommended Study Guide

**Week 7/26/21--7/30/21**  Video lectures # 1, 2.1, 2.2, 3, 4, 5, 6.

**Week 8/2/21--8/6/21**  Video lectures # 7,8,9, 10, 11.

**Week 8/9/21--8/13/21**  Video lectures # 12, 13, 14, 15, 16

**Week 8/16/21--8/20/21**  Video lectures # 17, 18, 19,20


**Homework Due Dates:**

- HW#1- Chapter 3, Problems 17(a,b), 23,24,25(a), and 27. Due Date: 8/1/2021.
- Fourier Transform notes.
- HW#2: Chapter 4, Problems 4,5,10,11,13. Due Date: 8/5/2021.
- HW#3-Chapter 5: Problems 3,16,18,19,21. Due Date: 8/8/2021.
- Midterm Exam will be on 8/11/2021 during normal class schedule.
- HW#4-Chapter 6:Problems 8,9,10,12,14. Due Date: 8/11/2021.
- HW #5: Chapter 7: Problems 4, 9, 11(a), 17, 19. Due Date: 8/15/2021.
- HW #6: Chapter 10, Problems 4, 9, 11, 22. Due Date: 8/22/2021.
- Final Exam will be on 8/25/2021 during normal class schedule

**Academic Dishonesty**

Any confirmed academic dishonesty including but not limited to copying homeworks or cheating on exams, will result in a no-pass or failing grade. You are encouraged to read the campus policies regarding academic integrity. Examples of cheating include (but are not limited to):

http://drc.ucsc.edu for more information on the requirements and/or process.
• Sharing results or other information during an examination.
• Working on an exam before or after the official time allowed.
• Using the Cell phone for any reason during exam.
• Submitting homework that is not your own work.
• Reading another student's homework solution before it is due.
• Allowing someone else to read your homework solution before the assignment is due.
• If there is any question as to whether a given action might be construed as cheating, see me before you engage in any such action.