Department of Electrical Engineering and Computer Sciences
University of California, Berkeley

EE 121: Introduction to Digital Communications
SPRING 2016

Description
In today’s multi-layered communication systems, data is stored, processed, transmitted and received dominantly in digital form. This course is an introduction to basic fundamental principles and mathematical tools for the design and analysis of digital communication systems. Topics include source and channel coding, network coding and distributed storage, baseband and passband modulation and transmission through wireless channels. Applications to classical and modern systems are specifically targeted and concepts are illustrated via exercises and projects.

Prerequisites
Background in probability and linear systems are required. CS70, EE20 and EE126 are recommended.

Instructor
Omur Ozel, ozel@berkeley.edu
Office: Cory 201
Office hours: Tuesday 4:00–5:00 pm, Thursday 4:00–5:00 pm, and by appointment

GSI
Preetum Nakkiran, preetum@berkeley.edu
Office hours: Wednesday 4:00–5:00 pm @ 341B Soda.

Meetings
Tuesday, Thursday, 2:00–3:30 pm, Cory 299
Discussions: Friday, 1:00–2:00 pm, Cory 521

Recommended Reading

Online Resources
All related online resources will be provided through bcourses.berkeley.edu.

Course Outline
We will cover the following topics in the specified order:
1. Preliminaries and review of basics
2. Classical communications
   - Communication over noisy channels
   - Transmission through wireless channels
   - Erasure and error correcting codes
   - Linear codes and decoding algorithms
3. Modern topics
   - Network coding
   - Distributed storage
   - Network caching
Course Expectations & Grading
Homework assignments, class participation, two midterms, two projects with the following percentages:

- Homework: 10%
- Participation: 10%
- Midterm 1: 25%
- Midterm 2: 20%
- Project 1: 15%
- Final Project: 20%

Key Dates
The following dates are tentative and subject to change:

- Midterm 1: March 17, 2016
- Project 1: March 31, 2016
- Midterm 2: April 21, 2016
- Final Project: Week of May 09-13, 2016

Assignments & Readings
The students are expected to follow announcements in bcourses.berkeley.edu. Homework and project assignments will be posted in bcourses.berkeley.edu. Additionally, student discussions will be run through Piazza.

Ethics
In this course, you must abide by EECS academic honesty and integrity policies, see http://www.eecs.berkeley.edu/Policies/acad.dis.shtml. This is essential for the success of our academic system.

Students with Disabilities
Any student with a disability who may need accommodation in this class must obtain an accommodation letter from the Disabled Students Program. If you have already obtained this letter, please contact the instructor for further details.