

## EE 374 Communication Engineering

Spring 2022

Project: PCM and Delta Modulation

Due Date: June 03, 2022, 23:59

### **Project Instructions:**

---

Consider the message signal  $m(t) = -\cos(200\pi t) + \sin(50\pi t)$ . Use MATLAB, Python, or C to complete the following tasks:

- **Task 1: Pulse Code Modulation** (*5 points*) Consider the message signal  $m(t)$  for the time interval (0,2) seconds. Obtain the pulse code modulated binary sequence if the signal is sampled at the Nyquist sample rate and  $L = 128$  quantization levels are used. You can start labeling the quantization labels from the top. The first sample is taken at  $t = T_s$ . Your code should display the binary representation of the first 10 samples on the screen, in the format "0110011-1010010-...".
- **Task 2: Delta Modulation** (*5 points*) Consider the message signal  $m(t)$  for the time interval (0,2) seconds. Obtain the delta modulated binary sequence if the signal is sampled at four times the Nyquist sample rate. The first sample is taken at  $t = T_s$ . Your code should display the binary representation of the first 20 samples on the screen.

You should submit your project as a single source file.