

ECE 534: FALL 2017
HOMEWORK I
ISSUED: SEPTEMBER 5TH. DUE SEPTEMBER 14TH.

- **Problem 1.** When coin a is flipped, it comes up heads with probability $1/4$, whereas when coin b is flipped it comes up heads with probability $3/4$. Suppose that one of these coins is randomly chosen and flipped twice. If both flips land heads, what is the probability that coin b was the one flipped?
- **Problem 2.** An infinite sequence of independent trials is to be performed. Each trial results in success with probability p and failure with probability $1 - p$. What is the probability that a) At least one success occurs in the first n trials? b) Exactly k successes occur in the first n trials, where $0 \leq k \leq n$? c) All trials are successful. Make sure to define the probability space and carefully justify all your answers.
- **Problem 3.** Problems 1.5, 1.7, 1.13, 1.19, 1.21.