

GEORGIA INSTITUTE OF TECHNOLOGY  
School of Electrical and Computer Engineering

ECE 3075A

Problem Set #8

Date assigned: March 10, 2017

Date due: March 27, 2017

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**Reading:** Read Chapter 9 in Stark and Woods.

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**Reminder:** Quiz #2 will be held on Wednesday, March 29, 2017. Two  $8\frac{1}{2}'' \times 11''$  handwritten sheets are allowed.

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**Problem 8.1:**

- (a) For a series of dependent trials, the probability of success on any trial is given by  $(k + 1)/(k + 3)$ , where  $k$  is the number of successes in the previous three trials. Define a state description and set of transition probabilities which allow this process to be described as a Markov process. Draw the state transition diagram. Try to use the smallest possible number of states.
- (b) Find the probability of success on the  $1000^{\text{th}}$  trial.

**Problem 8.2:**

Work problem 8.39 in Stark and Woods.

**Problem 8.3:**

Work problem 8.40 in Stark and Woods.

**Problem 8.4:**

Work problem 8.42 in Stark and Woods.