

**IEOR 4106, Midterm Exam-Information. 75 Minutes.  
Points Total. Professor K. Sigman**

**Open Notes** (anything on the course website plus your notes from class), but no books and no electronic devices of any kind.

**No Talking Allowed, and No Asking Questions (to Professor or Proctors or each other) During The Exam.** (If you do not understand something, do the best you can).

There will be 3-4 problems, each will cover some aspect of what is listed (not all):

1. Markov chain (Discrete-time): gambler's ruin problem, simple random walks, hitting probabilities, maximum, minimum of such random walks.
2. Markov chain (Discrete-time): communication classes, transient states and  $S = (I - P_T)^{-1}$ ,  $n$ -step transition probabilities  $P^{(n)} = P^n$ , positive recurrence, null recurrence and  $\pi = \pi P$ .
3. Stopping times, Wald's equation.
4. Poisson Process: independent stationary increments, partitioning, order statistics, superposition,  $M/G/\infty$  queue.

**Nothing on option pricing will be asked.**