
Syllabus

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Mobile Computing & Communications Lab.

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Learning Objectives

The goal of this course
is to provide various mathematical tools
for analyzing the performance of
communication system
and
for optimally designing wireless
communications systems

Course Description (1)

- ❖ Performance Evaluation
 - Probability Distribution
 - Stochastic Process
 - Discrete Time Markov Chain
 - Birth and Death Process
 - Poisson Process
 - Point Process
 - Single Queue Systems:
 - $M/M/1$, variations of $M/M/1$, $M/G/1$
 - Queuing Networks

Course Description (2)

- ❖ Communication Scheme Design
 - Hidden Markov Model (HMM)
 - Markov Decision Process (MDP)
 - Partially observable MDP
 - Convex Optimization
 - Game Theory

Class Materials (1)

❖ Lecture Notes

❖ Reference

– Probability and Stochastic Process

- Stochastic process (Author: Sheldon M. Ross)
- Fundamentals of Queuing Theory
(Author: D. Gross, C. M. Harris)
- Markov Process for Stochastic Modeling
(Author: Oliver C. Ibe)
- G. Monahan, " State of the art: a survey of partially observable Markov Decision Process: theory, models, and algorithms," Management Science, vol. 28, no. 1, Jan. 1982

Class Materials (2)

❖ Reference

- Convex Optimization
 - Convex Optimization
(Authors: Stephen Boyd and Lieven Vandenberghe)
- Game Theory
 - Game Theory for Wireless Engineers
(Authors: Allen MacKenzie and Luiz DaSilva)

Grading

- ❖ Quiz : 5회 (10 %)
- ❖ 대면 시험: 3회
 - 1차 (30%), 2차 (30%), 3차 (25%)
- ❖ 출석: 5 %
 - 수업일수의 $\frac{1}{4}$ 을 초과하여 결석하면 F
- ❖ A (30%), B (50%), C 이하 (20%)