Syllabus

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Learning Objectives

The goal of this course is to provide various mathematical tools for analyzing the performance of communication systems 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)
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: 8 ~ 10회 (30 %)
- Midterm Exam. (30 %)
- Final Exam. (30 %)
- 태도 및 출석 (10 %)
- A (30%), B (50%), C 이하 (20%)