IE 450	Boğaziçi University	Korugan
Syllabus	Department of Industrial Engineering	Fall 2015

Stochastic Models in Operations Research

The objective of this course is to give an intermediate level of understanding in modeling and optimization of systems presenting stochastic behavior. To this end first the general modeling tools are presented. Then discrete and continuous time Markov chains are discussed in detail and Markov decision processes are introduced. In the second phase of the course Markovian analysis and optimization applications in queueing and inventory systems are studied.

Topic	
1	Poisson Process: definitions, properties, generalizations
2	Renewal Reward Processes: renewal function, reward processes, applications
3	Markov Chains: states and classes, transient and recurrent processes, branching processes
4	Markov Processes: birth and death processes, limiting probabilities, properties, uniformization
5	Queueing Theory: Markovian and non-Markovian models, control mechanisms, applications
6	Markov Decision Processes: states and decision epochs, stationary policies, expected discounted and expected average cost criteria

Monday 10:00-11:00(M1200), 15:00-16:00(M2171), Wednesday 9:00-11:00 (M2180),

Course Prerequisites:
IE 305 or equivalent

References:
1. H.C. Tijms (2003) A First Course n Stochastic Models, John Wiley and Sons.
2. S. M. Ross (2003), *Introduction to Probability Models*. Academic Press
3. H.A. Taha (2003), *Operations Research*. Pearson Education.
4. H.M.Taylor and S. Karlin (1998) An Introduction to Stochastic Modeling, Academic Press.

Exam Dates: Quizzes : October 13th , October 27th , November 24th, December 22nd of 2014
Midterms: November 10th and December 15th

Grading:
Midterms: 42%, Quizzes: 18%, Final: 40%
In order to qualify for the final exam a student has to collect a minimum total of 50/100 points from quizzes and midterms. Missing both midterms results in an automatic F in the class. Make-up exams for midterms or quizzes will not be provided.

Course Website: http://moodle.ie.boun.edu.tr (Enrolment Key:TBA)

Instructor:
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Email: aybek.korugan@boun.edu.tr,
Office Hours: Monday 13:00-14:00, Wednesday 14:00-17:00

Teaching Assistant:
TBA Office:
Email:
Office Hours: