IMSE 866

# Applied Stochastic Processes and Theoretical Simulation

# Fall 2018

**DESCRIPTION**: Survey of stochastic processes and simulation. Topics covered include: discrete and continuous time Markov chains, random walks, queuing theory, renewal theory, random number generation, random variates and simulation modeling and analysis.

**TEXT:** **Required**:

Modeling and Analysis of Stochastic Systems, Third Edition – Vidyadhar G. Kulkarni

**TIME/ PLACE:** Lecture: MWF 10:30 a.m. − 11:20 a.m.

Lecture: Room: RA 2078 (video lecture available for distance students)

**INSTRUCTOR:** Ashesh Sinha (sinhaa@ksu.edu)

**OFFICE:** Ashesh Sinha -- 2083 Rathbone Hall Tel: 785-532-1661

**OFFICE HOURS:** Ashesh Sinha – TW 1:00 pm - 2:00 pm or by appointments

**HOMEWORK:** Two homework projects will be assigned. All projects should be done individually. **Do not copy each other’s projects.** Suspicious project models will be turned into University Honor Committee for Honor Pledge violations. Each project will also involve writing a report (40% report and 60% models). **Late Assignments will be graded with a 20% deduction per day until the total score becomes zero.**

**GRADING POLICY:**

50% Two Homework Projects

20% Mid term

30% Final

**NATURE OF CLASS MEETINGS:**

The class will be recorded for distance students. On campus students are also free to see video lectures. I will be mostly using white board and less PowerPoints. Some research papers will be also provided.

**ACADEMIC ACCOMMODATIONS FOR DISABLED STUDENTS:**

Any students with a disability who needs an accommodation or other assistance in this course should make an appointment to speak with the instructor as soon as possible.

**ACADEMIC HONESTY:**

Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper or project; failure in the course; and/or expulsion from the university. You shall not receive or give help from and to other individuals, other than your TA or instructor. For departmental policy please visit the Industrial and Manufacturing Systems Engineering department's [Statement on Academic and Professional Ethics](http://www.imse.ksu.edu/undergrad/advising/honesty) page at <http://www.imse.ksu.edu/undergrad/advising/honesty>. Fall semester 1999 marks the beginning of Kansas State University’s undergraduate Honor System. Please refer to [http://ww](http://www.ksu.edu/honor)[w.ksu.edu/honor](http://www.ksu.edu/honor) for more details.

**CLASS OUTLINE (IMSE 866 Fall 2018)**

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|  | * Introduction to Stochastic Processes |
|  | * Brief Review of Probability and Statistics |
|  | * Discrete-time Markov Chains |
|  | * Continuous-time Markov Chains |
|  | * Queuing Theory, Renewal Process |
|  | * Random Number Generation |

**THIS DOCUMENT IS PREPARED BY Ashesh Sinha ON THE DATE OF 08/20/2018**