

STOR 891: Modeling and Analysis of Service Operations - Spring 2014

Meetings: MW 12:30 pm - 1:45 pm Hanes 125

Instructor: Serhan Ziya

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Office Hours: Walk in or by appointment

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Course Description: This course will cover some select topics within the general area of service operations particularly those that deal with design and control. Students will have the opportunity to see how different methodologies including Markov chains, queueing theory, Markov decision processes, deterministic optimization, and game theory can be used in modeling and analysis of service systems. Emphasis will be given to applications from healthcare operations and emergency response systems. The main objective of the course is to give students exposure to a variety of topics pertaining to service operations but also help them develop skills needed for modeling as well as independent research. The only prerequisite for the course is STOR 641 or equivalent. Anything beyond will probably help the student benefit more but is not essential since I will provide the necessary background (particularly in regards to Markov decision processes and game theory) throughout the semester.

Prerequisite: STOR 641 or equivalent (or permission of instructor)

Textbook: There is no required textbook for the class. Course material will be based on several books, published articles, and Prof. Stidham's class notes.

Grading: Your grade will be based on homework assignments, one term project, presentation at the end of the semester, and class participation.

Homework: Homeworks will be assigned irregularly throughout the semester and most will be open-ended requiring independent and creative thinking on the part of the students. They will be mostly small research questions, which the students will try to provide some answers for using mathematical analysis, computer programming, and simulation.

Term project: What you need to do for the term project is also open-ended. It gives you a lot of flexibility to explore but you have to put in very serious effort in coming up with something that is good. Basically, I would like you to work either by yourself or form groups of two and pick any topic that you are interested in while staying within the boundaries of "modeling and analysis of service systems", carry out an extensive literature review on that topic, identify new questions that are of interest, and carry out preliminary work to investigate these questions. Here are the

key dates for the term project:

Wednesday, February 5: Deadline for term project proposals (1-page).

Wednesday, March 5: Progress meetings.

Wednesday, April 9: Progress meetings.

Thursday, May 1: Final report due.

For the final report, I do not like setting any page limits but brevity is always appreciated. Long reports never impress people. So, try to be concise. Just to give you a rough idea, I would expect something around 10-15 pages, but you can turn in something shorter or longer.

Presentations: At the end of the semester, each project group will present its term project. Presentations will be scheduled in the last 5-6 classes depending on the number of students taking the class. Your projects need not be complete at the time of the presentations, but should be close.