Instructor: Jyothsna Sainath
E-mail: sainath at math dot utah dot edu

Class Hours: TR 2:00 PM - 3:20 PM, on Zoom

Office Hours: TR 3:30 PM – 4:30 PM, or by appointment, on Zoom.

Course Material:
Required Textbook: Introduction to Stochastic Processes
by Gregory Lawler, Second Ed.

Prereq: Math 5010 (Statistical Inference) (grade C or higher). It would be useful to recollect linear algebra topics such as change of basis, eigenvectors, eigenvalues, and matrix diagonalization.

Course Content:
This course provides an introduction to the following topics which roughly span chapters 1 through 3 in the required text:
- Finite state, discrete time Markov chains
- Countable state, discrete time Markov chains
- Simulation of random variables: inverse transform method, rejection sampling, Monte Carlo, Metropolis-Hastings
- Countable state, continuous time Markov chains

If time permits, we may cover parts of renewal processes from Chapter 6 of the text.
This course includes a small required coding component for simulation. Students are expected to be able to code in at least one of R, Python or Matlab. Students who do not know how to code are advised to familiarize themselves with one of these environments via the many resources available online. Students who are familiar with environments other than these may check with the instructor if they prefer to submit code in a different language. Depending on the assignment, this may be a possibility.

Course Details:
- Course Type: Interactive Video Conferencing (IVC - synchronous online). This means that classroom instruction in a regular in-person semester will be delivered via a Zoom meeting scheduled during class time.
- The instructor will share their screen and write material on an iPad. This material will be posted on Canvas as a PDF file after the class session.
- Links to short videos may be posted about 24 hours ahead of class time periodically. When such videos are posted, students are expected to watch the video prior to the class and familiarize themselves with the material.
Home Work: There will be 4 HWs across the semester. These may be submitted either individually or in groups of no more than 3 people per submission. Due dates for HWs are posted below and HWs will be posted about 10 days prior to the due dates. There will be no HW drops and no late submissions will be accepted.

<table>
<thead>
<tr>
<th>HW</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>HW1</td>
<td>Tuesday, 15th September</td>
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<tr>
<td>HW2</td>
<td>Tuesday, 6th October</td>
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<tr>
<td>HW3</td>
<td>Tuesday, 27th October</td>
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<td>HW4</td>
<td>Tuesday, 17th November</td>
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Exams: There will be a mid term and a comprehensive final exam on the following days:
- Mid Term: Thursday, 1st October.
- Final: Wednesday, 9th December, 1:00 - 3:00 pm (Comprehensive)

Both exams will only be given at the scheduled time. Students are expected to arrange personal work around the announced dates. However, please contact the instructor in the event of illness or other extenuating circumstances. Specific policies with respect to exams will be communicated at a later date.

Grading: The minimum scores to guarantee a certain grade category are: 90 for an A, 80 for a B, 70 for a C and so on. This is a rough guide and may be subject to change. The break up of points in this course is as follows:

Homework: 40 %
Mid Term exam: 30 %
Final Exam: 30 %

COVID-19: Students must self-report if they test positive for COVID-19 via coronavirus.utah.edu. Even though this class is delivered online I understand the stress related to contracting COVID-19 or having a household member contract COVID-19. Please feel free to contact me if you are in this situation so that I may work with you to keep you up in the course.

The Americans with Disabilities Act: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access. Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University’s Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS).

Campus Safety: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu