

Syllabus For Math 640-331

Fall 2020

Rutgers University-Camden

COURSE TITLE: Probability and Stochastic Processes

TEXT: *Probability with Applications and R*, by Robert P. Dobrow, Wiley, 2014.

COURSE DESCRIPTION: This three-credit course provides a mathematically precise introduction to the basic concepts and results of probability, a branch of math that studies random phenomena. The basic principles of probability and stochastic modeling are described. Properties and applications of some standard stochastic models are analyzed. The concepts of conditional probabilities and independence are presented. The expectation and variance of random variables and their properties are discussed. Two fundamental limit theorems for long-time averages of independent, identically distributed random variables are stated and proven. The course concludes with an introduction to Markov chains and their long-run behavior. This course emphasizes on both theory and applications. Students will be introduced to R, a free software environment for statistical computing and graphics, and learn how to use it to simulate real-life problems. We plan to cover all chapters in the textbook. Prerequisites of the course are: Calculus I (640:121) and Calculus II (640:122).

REMOTE INSTRUCTION PLAN: Remote instruction will be conducted synchronously through Canvas, Zoom, emails and other tools with Canvas serves as the primary platform for instruction and communication. Lectures will be recorded and posted on Canvas along with other relevant course materials so that students can study these materials asynchronously.

Students are expected to have access to: (1) high speed internet; (2) a laptop, a desktop computer, an iPad, or a tablet; together with a built-in microphone and camera or a separate webcam and a mic; (3) a scanner, or a phone camera with an app for producing pdf documents from photos.

Students are encouraged to study the course materials before classes. Live lectures will be presented during the regular class hours using Zoom through Canvas. Students are required to make an effort to participate in these live remote-lectures. They can ask questions during the lectures using texts and/or microphones. Office hours will also be conducted using Zoom through Canvas. If for some reasons a student cannot participate in a live lecture, the student should promptly study the recorded lecture on the course Canvas site.

COURSE INFORMATION:

- Instructor: Siqu Fu
- Office: BSB 426
- Office hours: TTH 12:30 pm–1:30 pm on Zoom or by appointments

- Phone: 856 225-2349.
- E-mail: sfu@camden.rutgers.edu
- Web page: <http://people.camden.rutgers.edu/sfu/>
- Lectures: TTH 11:10 am-12:30 pm

ASSESSMENT: Homework and projects will be assigned and collected regularly. There will also be weekly quizzes. Students are asked to submit their work through Canvas. There will be two midterm tests, taking place on Thursdays, October 15 and November 24. The tests will be open book tests and students will be given additional time than usual to complete the test, scan their work into a PDF file, and submit the file through Canvas. The final exam will also be an open book test. It will be on Tuesday, December 15, 11:30-2:20 as specified in the campus-wide final exam schedule.

Grades will be assigned based on students' performance in the homework assignments, mid-term tests, and the final exam. Your course grade will be determined according to the following weights:

- Homework, projects, and Quizzes: 30%
- Test I: 20%
- Test II: 20%
- Final: 30%

ATTENDANCE POLICY: Attendance is expected for every class period with exception for illness, court appearance, and other legitimate emergency. See the Rutgers University attendance policy at <http://policies.rutgers.edu/1027-currentpdf>.

ACADEMIC INTEGRITY: All Rutgers students are expected to be familiar with and abide by the academic integrity policy:
<https://policies.rutgers.edu/sites/default/files/10.2.13%20-%20current.pdf>.
 Violations of the policy are taken very seriously.

UNIVERSITY DISABILITY STATEMENT: Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

<https://ods.rutgers.edu/students/documentation-guidelines>.

If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form at: <https://webapps.rutgers.edu/student-ods/forms/registration>.