# Syllabus For Math 640-331

### Fall 2019
### Rutgers University-Camden

**COURSE TITLE:** Probability and Stochastic Processes

**TEXT:** *Probability with Applications and R*, by Robert P. Dobrow, Wiley, 2014. SUPPLE-MENTARY READING: *Introduction to Probability*, by Charles M. Grinstead and J. Laurie Snell, American Mathematical Society, 1998. (Both books are available online.)

**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), Calculus II (640:122) and Mathematical Reasoning (640:300).

**COURSE INFORMATION:**

- Instructor: Siqi Fu
- Office:  BSB 428
- Office hours: TTH 11:00 am–12:30 pm and by appointments
- Phone:  856 225-2349.
- E-mail:  sfu@camden.rutgers.edu
- Web page:  `http://crab.rutgers.edu/~sfu/`
- Lectures: TTH 2-3:20, A 201

**ASSESMENT:** There will be three tests: two midterm tests and the final. There will also be weekly homework assignments. Your course grade will be determined according to the following weights:

- Attendance, Participation, Homework: 20%
- Test I: 20%
- Test II: 25%
- Final: 35%

Dates for the tests will be announced in class.

**ATTENDANCE POLICY:** Attendance is expected at 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 (http://academicintegrity.rutgers.edu/academic-integrity-policy). Violations of the policy are taken very seriously.

**UNIVERISTY 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 campuss 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.