Overview

This is a mathematically rigorous introductory course on probability theory. Mathematical maturity at least at the level of *Baby Rudin* (Principles of Mathematical Analysis) will be presumed along with the expectation of perseverance on solving problems. The course will be taught to address the needs of doctoral students who are not aiming to become probabilists. Specifically, it will help you better understand many advanced courses including asymptotic theory of statistics, and Bayesian non-parametrics. I am likely to draw upon many sources, but Rick Durrett's *Probability: Theory and Examples, 5th Edition* will be our main reference/text (and the de facto standard text in top doctoral programs). Our tentative goal is to cover basic general measure theory including Radon-Nikodym theorem, independence and product spaces, standard strong law of large numbers, conditioning and martingales. This is an ambitious goal; towards achieving this some proofs will need to be delegated as required reading.

Grading Scheme

- **35%** Homework: Homework will be assigned on a regular basis. The solutions will have to be typeset in LaTeX and submitted electronically on ICON by the due date. Problems will be graded for both mathematical correctness, as well as for the quality of the exposition. One way to improve exposition is to pay close attention to how math is written in your favorite graduate level math text, and try to imitate it.
- **50%** Two Midterm Exams: 25% each
- **15%** Take Home Finals: 15%

Instructor:

Nariankadu D. Shyamalkumar
- Office Hrs: TTh 4 - 5:30pm
- Zoom - 
- [www.stat.uiowa.edu/~nshyamal](http://www.stat.uiowa.edu/~nshyamal)
- shyamal-kumar@uiowa.edu

Department:

Statistics & Actuarial Science
- SH 241
- 335-0712
- Chair: Prof. Kung-Sik Chan
- [kung-sik-chan@uiowa.edu](mailto:kung-sik-chan@uiowa.edu)

Class Info:

- TTh 6:30-7:45pm
- SH-31

Exams:

- Mid-Term I: Tuesday, 29th of Sep.
- Mid-Term II: Tuesday, 10th of November
- Final: Take Home Finals

TA Info:

Hong Beng Lim
- [hongbeng-lim@uiowa.edu](mailto:hongbeng-lim@uiowa.edu)
Absences and Attendance

Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing their course absence policies, which will vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, military service obligations, unavoidable circumstances, or University authorized activities. Students may use the CLAS absence form to aid communication with the instructor who will decide if the absence is excused or unexcused. The form is on ICON in the top banner under “Student Tools.” More information is at https://clas.uiowa.edu/students/handbook/attendance-absences.

Academic Integrity

All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty. Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through UI email. Visit this page for information: https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code.

Accommodations for Disabilities

UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student is then responsible for discussing specific accommodations with the instructor. More information is at https://sds.studentlife.uiowa.edu/.

Administrative Home of the Course

The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other colleges may have different policies. CLAS policies may be found here: https://clas.uiowa.edu/students/handbook.

Class Behavioral Expectations

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life. This includes the policies and procedures that all students have agreed to regarding the Steps Forward for Fall 2020 in response to the COVID-19 pandemic. Particularly, all students are required to wear a face covering when in a UI building, including a classroom. In addition, the density of seats in classrooms has been reduced; in some instances, this will allow 6 feet or more between students while other cases, it may be less. Regardless, wearing a face covering and maintaining as much distance as possible are vital to slowing the spread of COVID19. In the event that a student disrupts the classroom environment through their failure to comply with the reasonable directive of an instructor or the University, the instructor has the authority to ask that the student immediately leave the space for the remainder of the class period. Additionally, the instructor is asked to report the incident to the Office of Student Accountability for the possibility of additional follow-up. Students who need a temporary alternative learning arrangement related to COVID-19 expectations should contact Student Disability Services (https://sds.studentlife.uiowa.edu/fall-2020/covid-19-temporary-learning-arrangements/; +1 319 335-1462).
Class Recordings: Privacy and Sharing

Some sessions of a course could be recorded or live-streamed. Such a recording or streaming will only be available to students registered for the course. These recordings are the intellectual property of the faculty, and they may not be shared or reproduced without the explicit written consent of the faculty member. Students may not share these sessions with those not in the class; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and, in some cases, a violation of the Federal Education Rights and Privacy Act (FERPA).

Communication and the Required Use of UI Email

Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2).

Complaints

Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences; see this page for more information: https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.

Final Examination Policies

The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals with very few exceptions made (for labs, ESL and some world language courses, and off-cycle courses): https://registrar.uiowa.edu/final-examination-scheduling-policies.

Nondiscrimination in the Classroom

The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (https://diversity.uiowa.edu/eod; +1 319 335-0705).

Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see https://osmrc.uiowa.edu/.