STA 4321 Sec. 7461 **Introduction to Probability** **Spring 2020**
STA 5325 Sec. 7462 **Fundamentals of Probability**

Instructor: Bikram Karmakar (`bkarmakar@ufl.edu`)

Class Hours: Monday, Wednesday, Friday | Period 5 (11:45 AM–12:35 PM)

Location: Anderson Hall (AND) 134

Course Website: Canvas page. Please check regularly.

Instructor's Office: 226 Griffin-Floyd Hall. (Phone. 352-273-2994)

Office Hours: Wednesdays 1:00–3:00pm, or by appointment via email.

Teaching Assistant: Heejun Shi

Office: TBD; **Office Hours:** TBD.

Goal

The sequence of courses STA 4321-4322 (rep. 5325-5328) provides a formal and systematic introduction to probability and mathematical statistics for students who have passed three semesters of standard undergraduate level calculus. STA 4321/5325 introduces the background in probability that is necessary to understand the classical statistical theory introduced in STA 4322/5328.

These topics are fundamental to many of today's important developing areas, e.g. data science and machine learning, and they are fundamental for many other important areas — statistical inference, clinical trials, social sciences, econometrics, just to name a few.

Prerequisite

MAC 2313 (or equivalent third semester calculus course). **Note**: A well-prepared student should have taken an introductory statistics course, such as STA 2023 or STA 3032.

Course Content (at a glance)

Introduction to the theory of probability, counting rules, conditional probability, independence, additive and multiplicative laws, Bayes Rule. Discrete and continuous random variables, their distributions, moments and moment generating functions. Multivariate probability distributions, independence, covariance. Distributions of functions of random variables, sampling distributions, central limit theorem.

Textbook

Wackerly, Mendenhall, and Scheaffer, *Mathematical Statistics with Applications* (7th ed), Duxbury Press (Thomson Brooks/Cole Publishing), 2008.

Lectures will cover (roughly) chapters 1–7. **Note that**, the exams will be based on material taught in the lectures.

Grades

There will be 4 in-class pre-scheduled exams. This course will have the following allocation of the grades.

1. The lowest of the first 3 in-class exams will be dropped.
2. The remaining 2 will carry towards the final grade. They will carry a 31% and 23% of the grade, respectively, in the following way. The best of the 2 will carry 31% of the grade and the second best will carry 23% of the grade.

   Total: 31 + 23 = 54% of the final grade.
3. The 4th exam will carry 40% of the final grade. The final exam will be cumulative.
4. 6% of the grade will be based on class participation.

Exam dates

Three in-class exams will be held tentatively on **Jan 29, Feb 24** and **Mar 30**, and the fourth exam will be on **the last day of the class**.

Homeworks and Exercises

- Homeworks will be an important part of this course; but, they will not be graded.
- Approximately every other week there will be a homework set. In the week following a homework set is posted, the solution to all the homework problems in the set will be also posted on the course website.
- There will potentially be in-class exercises, which will also not carry any weight towards the final grades, but, will be an important part of the course.
- All lecture notes, homeworks and their solutions, and exercises will be posted on the course website.

Please be keenly aware of the policies of the University of Florida on Student Honor Code and Student Conduct Code at `https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/`

University Policies

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, `dso.ufl.edu/drc`) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: `catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/`

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Relevant links: `gatorevals.aa.ufl.edu/students/`; `ufl.bluera.com/ufl/`; `gatorevals.aa.ufl.edu/public-results/`.