


MTH 451: Introduction to Probability and Statistics

Fall 2019

University of Rhode Island, Department of Mathematics

INSTRUCTOR:	Jonathan A. Chávez Casillas
E-MAIL:	jchavezc@uri.edu
LECTURE TIMES (Section 1):	Mon-Wed-Fri, 12:00 - 12:50. Woodward Hall 216
LECTURE TIMES (Section 2):	Tues-Thurs, 2:00 - 3:15. Lippitt Hall 204
OFFICE:	Lippitt Hall 200A
OFFICE HOURS:	Wednesday 1:30pm - 3 pm Thursday 3:15pm - 4 pm (Or by appointment) ¹
COURSE WEBSITE:	http://math.uri.edu/~jchavezc/451teaching.html

 **Course Objectives and Goals:** This is an introductory course in theoretical probability. The objective is to know the fundamental tools of probability that are needed to understand statistics. Some topics that need to be mastered are Probability spaces, properties of probability, probability distributions, expectation, elementary limit theorems and conditional expectation.

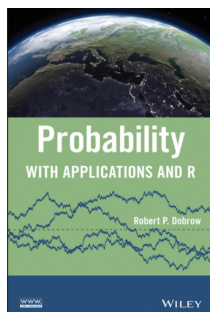
 **Brief Course Description:** The course will be divided mainly in three parts:

- **Theoretical framework of probability:** Become familiar with basic concepts in probability, such as probability spaces, sample spaces, probability functions, etc. It is important to understand conditional probability and independence as they are the foundation of modern probability and statistics.
- **Random Variables:** Understand what is a random variable and how it becomes one of the central objects in the usage of probability in real life. Also it will be important to understand how random variables arise from probability spaces and understand the most common distributions of random variables and its statistics as expectation and variance. Finally, we will cover a central topic in modern theory of probability: Conditional Expectation.
- **Applications of Probability and the usage of R** Learn how to use R as a tool to help us visualize and understand the most important concepts in probability.

¹The student should supply a reason why he/she cannot attend the regular office hours



Textbook: “Probability With Applications and R”. Robert P Dobrow. Wiley.



Grade Description: There will be two Midterms and a *Cumulative* Final Exam. There are no make-up quizzes or exams. If you need to be absent from a class or test for valid reasons, you should notify the instructor with anticipation and the weight will be sent to the final examination. For reference see section 8.51 of the University Manual. The grade will be computed as follows:

EVENING xam 1:	20%	October 10th
EVENING Exam 2:	20%	November 13th
Homework/Worksheets:	20%	Usually, once per week
R-Homework:	10%	Usually, once per week.
Cumulative Final Exam:	30%	TBA

- **EVENING Exams:** Both midterms (Exam 1 and Exam 2) will be evening exams. The date can be found above, while the time and location will be provided during the first week of classes. Both Midterms and the *Cumulative* Final Exam will be a combination of true/false, multiple choice and open answer questions. There is no partial credit for the true/false and multiple choice questions; however, there will be partial credit in the open answer questions. **There are no make-up exams.** If, for any **valid** reason (up to the discretion of the instructor), you cannot attend any of the midterms, the weight will be shifted towards the final exam.

- **Grade distribution²:**

92.00 - 100	A	68.00 - 70.99	C
87.00 - 91.99	A-	64.00 - 67.99	C-
82.00 - 86.99	B+	60.00 - 63.99	D+
78.00 - 81.99	B	55.00 - 59.99	D
75.00 - 77.99	B-	0.0 - 54.99	F
71.00 - 74.99	C+		

- **Homework/Worksheets:** Homework (in the form of a worksheet) will be assigned at the end of each week. It is the student’s responsibility to complete all the assigned exercises and to go to office hours or ask in class if there are questions. Making the homework

²Different grades may be given for borderline cases, to the discretion of the instructor.

as consciously as possible becomes of vital importance since the midterms and final's exam content will be primarily generated from the worksheets. The usual schedule for a worksheet is as follows:

After a week of classes, a worksheet containing exercises related to that week's material will be given. Students will have a week to complete the worksheet and go to office hours and ask questions in class (if the question is too long or there are too many questions, students may be referred to office hours). The worksheet is due one week after it is provided. Finally, solutions to the worksheets will be available on the course website (url can be found at the beginning of this document) after students submit their work.

The lowest grade will be dropped.


- **R-Homework:** This homework will test the student's ability to solve a problem using the computer. This homework will be submitted via Sakai, under assignments. Students must ONLY upload the .R file and the file should be named as: "HWK n _LastName.Initial.R", where n stands for the Homework number, *LastName* is the student's last name and *Initial* stands for the student's given name initial. For example, for my R-Homework number 3, I should submit in Sakai the file: "HWK3_Chavez.J.R". The usual schedule for the R-Homework is the same as the one of the Worksheets. R-Homeworks will be graded as correct or incorrect and solutions will be provided in the course website. **Basically, I will only run the code and verify if it produces the right output.** In case there is a question about the R-Homework, it can ONLY be answered in office hours or by appointment. The lowest grade will be dropped.





Attendance and Course Expectations: The student is expected to attend all the lectures even-though there is no official "roll call". **This is a very demanding course** and it is expected hard work from the students. Students are responsible for all missed work, regardless of the reason for absence. It is also the student's responsibility to get all missing notes and material covered within that missed lecture. Moreover, the student is expected to:


- **Clear Writing:** All the student work presented to the instructor (quizzes, exams, homework questions) should be legible and clean. No steps should be skipped when doing a rational deduction.
- **Homework:** Do all the homework assigned even-though it is not graded. The fast pace of the class require that the student perform work out of class.
- **Prepare for lecture:** The student is expected to read the material of the class prior to attending. The different topics and fast pace require that the student reads the textbook before coming to class.
- **Ask for questions:** If the student does not understand some points of the lecture, the student is expected and encouraged to ask questions in lectures and attend office hours if needed.


- **Standards of behavior:** Students are responsible for being familiar with and adhering to the “Community Standards of Behavior: University Policies and Regulations” (found at web.uri.edu/studentconduct/university-student-handbook). If the student arrives late to class, he/she should not disrupt the class. All cell phones or any electronic devices must be turned off.

 **Make up policy:** As mentioned above, there are no make-up exams or quizzes. If there is a valid reason for missing a test, the weight will be redistributed towards the final exam. For quizzes, since the lowest 2 grades are dropped, no weight will be re-distributed for the first 2 missed quizzes (even-thought there is a valid reason). For more than 3 justified absences, a re-weighting can be done.

 **Electronic Devices and other policies:** No electronic devices are allowed, except for note-taking devices (and being used for taking notes) and other particular electronic devices that the instructor allows.

 **Academic Honesty Policy:** Cheating is defined in the University Manual section 8.27.10 as the claiming of credit for work not done independently without giving credit for aid received, or any unauthorized communication during examinations. Students are expected to be honest in all academic work. Consequences for any charge of cheating or plagiarism will follow the guideline established in the University Manual 8.27.10-8.27.21, <http://web.uri.edu/manual/chapter-8/chapter-8-2/>.

 **Special Needs:** Students with disabilities should contact the instructor at the beginning of the semester so that he/she is provided reasonable accommodations. Students must also contact Disability Services for Students: Office of Student Life, 330 Memorial Union, 874-2098 to determine the appropriate accommodations.

 **Religious holidays:** Per policy of the University of Rhode Island, on an individual basis, the student has the opportunity to observe their traditional religious holidays. However, a written notification to each instructor is required.