

# Course Syllabus - MATH 2311-02

## Introduction to Probability and Statistics

Fall 2019

Instructor: Dylan Domel-White  
E-mail: [dylandw@math.uh.edu](mailto:dylandw@math.uh.edu)  
Class Hours: Tu/Th 2:30 - 4:00pm  
Class Room: SEC 101

Class Number: 16712  
Web: [www.math.uh.edu/~dylandw](http://www.math.uh.edu/~dylandw)  
CASA Hours: We/Th 1-2pm  
Department Office: PGH 609

---

**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**

---

### Course Description

- Description: Probability, correct probabilistic reasoning, distributions, graphical and descriptive methods, sampling estimation, hypotheses and statistical inference.
- Prerequisite: A satisfactory score on a placement examination. May not apply to course or GPA requirements for a major or minor in natural sciences and mathematics. Students with prior credit for MATH 3338 or 3339 may not enroll in or receive credit for MATH 2311.
- Textbook: Available in electronic form (PDF) through CASA ([www.casa.uh.edu](http://www.casa.uh.edu)) for all enrolled students.

### Learning Objectives

The student will be able to:

- Demonstrate the ability to compute basic descriptive statistics.
- Interpret statistical data.
- Understand statistical inference and interpretation.
- Apply statistical concepts to actual data.

## Grading

### Final Grade Breakdown:

Poppers	5%
Online Quizzes	10%
Homework	10%
Midterm Exams (3 exams)	45% (15% each)
Final Exam	30%

### Adjustments to Final Grade:

- Popper grade is calculated with 85% as full score. For example, if there are 5 popper questions each class for 24 classes totaling 120 questions, then your popper grade will be calculated out of  $120(.85) = 102$  points.
- One of the lowest quiz grades is dropped.
- Two of the lowest homework grades are dropped.
- If it is higher, your final exam grade will replace your lowest midterm exam grade.

### Grading Scale:

93% and above = A	at least 73% and below 77% = C
at least 90% and below 93% = A-	at least 70% and below 73% = C-
at least 87% and below 90% = B+	at least 67% and below 70% = D+
at least 83% and below 87% = B	at least 63% and below 67% = D
at least 80% and below 83% = B-	at least 60% and below 63% = D-
at least 77% and below 80% = C+	below 60% = F

## Late Assignment, Make-Up, and Incomplete Policies

- This course is a cumulative course. You as a student need to keep up with the reading, homework assignments, quizzes, and exams. Thus late work or make-ups will not be accepted. *Exceptions may be made per the Student Academic Adjustments/Auxiliary Aids Policy for students with approved CSD accommodations (see below), as well as for students with an official excused absence as recognized by University of Houston in accordance with federal and state law.*
- Incomplete policy: A notation of “incomplete” may be given in lieu of a final grade to a student who has carried a subject successfully until the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student’s control, has been unable to take or complete the final examination or to complete some limited amount of term work.

## Popper Information

- You must purchase a package of popper forms from the bookstore before the third week of the course. Make sure they are for your section of the course: MATH 2311-02, 16712, Tu/Th 2:30 - 4:00pm.
- For each lecture, starting on the third week of classes, you will be asked a series of problems that will have to do with the lecture. Record your answers on a popper form and turn it in at the end of class.

## Quiz Information

- All of the quizzes start open and will close in order every Saturday at 11:59 pm starting on August 31st.
- The quizzes are accessed through the CASA CourseWare website using the Online Assignments tab at the top of the course page.
- Each quiz may be taken up to 20 times. There is a 90 minute time limit per attempt.
- The *Course Policy Quiz*, located under the Online Assignments tab in CASA, must be completed with a score of 100% before any other items in that tab become available to you. Despite its posted deadline, complete it within the first week of the semester so you do not miss other assignments. Any assignments you miss because of failure to complete the Course Policy Quiz, will be scored as zero.

Quiz	Sections	Topics Covered	Date Closed
Quiz 1	1.1 - 1.5	Descriptive statistics and graphs	Aug 31
Quiz 2	2.1 - 2.4	Counting techniques, sets, and probabilities	Sep 7
Quiz 3	2.4 - 3.1	Discrete random variables	Sep 14
Quiz 4	3.2 - 3.3	Binomial and geometric distributions	Sep 21
Quiz 5	4.1 - 4.3	Continuous random variables and normal distribution	Sep 28
Quiz 6	4.3 - 4.4	Standard normal distribution and sampling distributions	Oct 5
Quiz 7	5.1 - 5.3	Scatterplots, correlation, and regression	Oct 12
Quiz 8	5.4 - 5.6	Residuals, non-linear models, relations in categorical data	Oct 19
Quiz 9	6.1 - 6.3	Samples and experiments	Oct 26
Quiz 10	7.1 - 7.3	Estimation and confidence intervals for proportions	Nov 2
Quiz 11	7.4 - 7.5	Confidence intervals for means	Nov 9
Quiz 12	8.1 - 8.2	Hypothesis testing for one sample mean or proportion	Nov 16
Quiz 13	8.3 - 8.5	Hypothesis testing for two or more samples and fit test	Nov 23

## Homework Information

- There are assignments due every Wednesday at 11:59 pm starting on September 4th.
- The homework will be submitted in the CASA CourseWare website under the Assignments tab. See [Instructions to Upload Homework in CASA](#) for help with uploading the homework.
- Working with other students on the assignments is highly recommended. However, each student's homework must present their original work. Otherwise this will affect your grade.
- Homework that is illegible, scanned upside-down or sideways, uploaded as multiple files, etc. will receive a point deduction. Please double-check the file after you have uploaded to make sure it has been done correctly.
- Since these assignments are manually read and graded, please allow 2 - 3 weeks for grading.

Homework	Sections	Topics Covered	Due Date
HW 1	1.1 - 1.5	Descriptive statistics	Sep 4
HW 2	2.1 - 2.4	Introduction to probability	Sep 11
HW 3	3.1 - 3.2	Discrete random variables, binomial distributions	Sep 18
HW 4	3.3 - 4.2	Cont. random variables, geometric & normal dist.	Sep 25
HW 5	4.3 - 4.4	Normal distributions, sampling distributions	Oct 2
HW 6	5.1 - 5.3	Scatterplots, correlation, and regression	Oct 9
HW 7	5.4 - 5.6	Residuals, non-linear models, relations in categorical data	Oct 16
HW 8	6.1 - 6.3	Sampling and experiments	Oct 23
HW 9	7.1 - 7.3	Estimation and confidence intervals for proportions	Oct 30
HW 10	7.4 - 7.5	Confidence intervals for means	Nov 6
HW 11	8.1 - 8.2	Hypothesis testing for means and proportions	Nov 13
HW 12	8.3 - 8.5	Mixed hypothesis testing, chi-squared tests	Nov 20

## Exam Information

### Midterm Exams (tentative):

- All sections of MATH 2311 take common exams.
- The three exams will be given in CASA located on the second floor of Garrison, CBB or Agnes Hall, see the exam scheduler for details.
- The exam scheduler will be available approximately 2 weeks prior to the start of the exam cycle. The scheduler is accessed through the Proctored Exams tab at the top of the course page in CASA.
- The exams given will consist of either multiple choice or a combination of multiple choice and free response questions. The multiple choice questions will be machine graded, and the free response questions will be graded by the instructors and teaching assistants for all sections of MATH 2311.

- There are practice exams available online in the CASA CourseWare site under the Online Assignments tab. 5% of the score that you receive for the practice test be added to your test score as extra credit.

Exam	Material Covered	Dates
Midterm 1	Chapters 1, 2, and 3	Sep 19 - 21
Midterm 2	Chapters 4, 5, and 6	Oct 24 - 26
Midterm 3	Chapters 7 and 8	Nov 21 - 23

### Final Exam:

- There is a comprehensive final exam, available **Dec 7 - 10**.
- You access the scheduler for this exam by logging into CourseWare just like for the midterms.
- If your final numerical score for the course is 80.00 or higher as calculated by the official Math Department Grade Calculator and you have completed the teacher evaluation, then you may CHOOSE to be exempt from the final. Your grade will be the grade calculated by the grade calculator at the time of the deadline. If you do not have a semester numerical average that is 80.00 or higher by the exemption deadline, then you must take the final (note that there is no rounding of grades for exemptions). Details and instructions will follow later.

### **Course Access Code:**

The textbook, online quizzes, and additional help materials will be made available by logging into CASA CourseWare at [casa.uh.edu](http://casa.uh.edu). The first portion of these materials is freely available for the first two weeks of class. All students must purchase a Course Access Code (either online through the login page, or at the University Bookstore) and enter it on CourseWare by the beginning of the third week of class to continue accessing the course learning materials. The Course Access Code costs \$55.

Regardless of the deadline for purchasing/entering the access code, do this as soon as possible. If you are locked out of the system due to access code issues, any assignments you miss while your account is being re-activated will receive a grade of zero.

### **Computer Requirements:**

- Knowledge of a statistical computing package is an indispensable part of modern statistics. The class presentations, some homework assignments, and the exams are computer based.
- The statistical package RStudio is used in this class for exploring statistical concepts and demonstrating statistical analysis of actual data useful for business decisions. No previous knowledge of this software is assumed.
- This software is a free package that you can download onto your personal computer. It will be available to you during your exams in CASA.

- First, download R ([cran.cnr.berkeley.edu](http://cran.cnr.berkeley.edu)) and then RStudio ([rstudio.com](http://rstudio.com)). You can also run RStudio through an internet browser without installing anything ([rstudio.cloud](http://rstudio.cloud)). If you have any issues, let me know.

## Lecture Schedule

This table is tentative and may need to be updated during the semester. Updates will be announced in lecture and posted on the course CASA website.

Week	Sections Covered	Topics
Week 1	Intro, 1.1-1.4	Types of data, descriptive statistics
Week 2	1.5 - 2.1	Statistical graphs, counting techniques
Week 3	2.2 - 2.4	Sets, venn diagrams, probability rules
Week 4	3.1 - 3.2	Discrete random variables, binomial distributions
Week 5	3.3 - 4.1, Test 1	Geometric distributions, density curves, Test 1 review
Week 6	4.2 - 4.4	Introduction to normal distribution, sampling distributions
Week 7	5.1 - 5.3	Scatterplots, correlation, least-squares regression
Week 8	5.4 - 5.6	Residuals, non-linear models, contingency tables
Week 9	6.1 - 6.3	Samples, experiments, and simulations
Week 10	7.1 - 7.2, Test 2	Confidence intervals for one sample proportion, Test 2 review
Week 11	7.3 - 7.4	Confidence intervals for one sample mean, two sample means
Week 12	7.5 - 8.1	Two proportion intervals, introduction to hypothesis test
Week 13	8.2 - 8.4	Hypothesis test for one/two mean(s)/proportion(s)
Week 14	8.5 - 8.6, Test 3	Chi-square test, Test 3 review
Week 15	Final review	Final exam review

## CSD Accommodations

### Academic Adjustments/Auxiliary Aids:

- The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students who have a disability. In accordance with Section 504 and ADA guidelines, University of Houston strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please visit the Center for Students with DisABILITIES (CSD) website at [uh.edu/csd](http://uh.edu/csd) for more information.

### Accommodation Forms:

- Students seeking academic adjustments/auxiliary aids must, in a timely manner (usually at the beginning of the semester), provide their instructor with an approved current Student Accommodation Form (paper copy or online version, as appropriate) before an approved accommodation can be implemented.

- Details of this policy, and the corresponding responsibilities of the student are outlined in the Student Academic Adjustments/Auxiliary Aids Policy (01.D.09) document under [STEP 4: Student Submission (5.4.1 & 5.4.2), Page 6]. For more information please visit the Center for Students with Disabilities FAQs page.
- Additionally, if a student is requesting a (CSD approved) testing accommodation, then the student will also complete a Request for Individualized Testing Accommodations (RITA) paper form to arrange for tests to be administered at the CSD office. CSD suggests that the student meet with their instructor during office hours and/or make an appointment to complete the RITA form to ensure confidentiality.
- Note: RITA forms must be completed at least 48 hours in advance of the original test date. Please consult your counselor ahead of time to ensure that your tests are scheduled in a timely manner. Please keep in mind that if you run over the agreed upon time limit for your exam, you will be penalized in proportion to the amount of extra time taken.

## UH CAPS Statement

- Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS ([uh.edu/caps](http://uh.edu/caps)) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus ([uh.edu/caps/outreach/lets\\_talk.html](http://uh.edu/caps/outreach/lets_talk.html)).

## Other Information

- Besides asking your instructor, tutoring is available for this course at two places on campus: CASA in Garrison 222 (see [uh.edu/casa/tutoring-center](http://uh.edu/casa/tutoring-center)) and LAUNCH in Cougar Village 1 N109 (see [ussc.uh.edu/lss/tutoring.aspx](http://ussc.uh.edu/lss/tutoring.aspx)). I will be in the CASA tutoring center on Wednesdays 10 - 11am and Thursdays 1 - 2pm.
- For information about the UH academic honesty policy and procedures see: [uh.edu/provost/policies/honesty/\\_documents-honesty/academic-honesty-policy.pdf](http://uh.edu/provost/policies/honesty/_documents-honesty/academic-honesty-policy.pdf)
- This course shares many policies with the MATH 13XX courses, which can be found here: [uh.edu/nsm/math/undergraduate/course\\_policies/math13xx\\_policies](http://uh.edu/nsm/math/undergraduate/course_policies/math13xx_policies)