

# COURSE SYLLABUS – MATH 2311

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**SEMESTER COURSE OFFERED: Winter 2019**

**COURSE NUMBER: MATH 2311 – 07**

**CRN: 16039**

**NAME OF COURSE: Introduction to Probability and Statistics**

**INSTRUCTOR: Dr. Matthew Caputo, PGH 207, mgcaputo@uh.edu**

**WEBSITE: <http://math.uh.edu/~caputo> <http://casa.uh.edu> (courseware)**

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**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.**

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## **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 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.

## **Major Assignments/Exams**

### **ASSESSMENTS**

|                 |                |
|-----------------|----------------|
| Poppers         | 5%             |
| Online Quizzes  | 10%            |
| Homework        | 10%            |
| Exams (3 exams) | 75% (25% each) |

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## GRADING SCALE

93% and above - A

at least 90% and below 93% - A-

at least 87% and below 90% - B+

at least 83% and below 87% - B

at least 80% and below 83% - B-

at least 77% and below 80% - C+

at least 73% and below 77% - C

at least 70% and below 73% - C-

at least 67% and below 70% - D+

at least 63% and below 67% - D

at least 60% and below 63% - D-

below 60% - F

## INSTRUCTIONS FOR POPPERS

- For each lecture, starting on Section 2.2 you will be asked a series of problems that will have to do with the lecture.
- These will be answered in the EMCF tab of CASA
- The total number of questions for the course will be counted, 85% of the total number of questions will be the 100%. For example, if there are 5 questions each class for 24 classes, which is 120 questions. Your grade will be calculated out of  $120(.85) = 102$  points. This will be recorded as a 100 (there this a cap of 100%)

## INSTRUCTIONS FOR QUIZZES

- All of the quizzes are open and will close on the dates listed below.
- The quizzes have to accessed through CASA using the Online Assignments tab at the top of the course page.
- One of the lowest quizzes will be dropped.
- You have 20 times to take each quiz.
- There is a 90 minute time limit for each quiz.
- The following table shows what sections each quiz covers.
- These are linked to copies of one version of each quiz. (These are samples. You must submit online for a grade.)

| Quiz    | Sections Covered | Topics Covered  | Date Closed |
|---------|------------------|---|-------------|
| Quiz 1  | 1.1-1.5          | Descriptive Statistics and Graphs   | December 18 |
| Quiz 2  | 2.1-2.4          | Counting Techniques, Sets and Probabilities                                 | December 20 |
| Quiz 3  | 2.4-3.1          | Discrete Random Variables   | December 23 |
| Quiz 4  | 3.2-3.3          | Binomial and Geometric Distributions  | December 24 |
| Quiz 5  | 4.1-4.3          | Continuous Random Variables and Normal Distribution                         | December 26 |
| Quiz 6  | 4.3-4.4          | Standard Normal and Sampling Distributions                                  | December 27 |
| Quiz 7  | 5.1-5.3          | Scatterplots, Correlation, Regression                                       | December 30 |
| Quiz 8  | 5.4-5.6          | Residuals, Non-Linear Models, and Relations in Categorical data             | December 31 |
| Quiz 9  | 6.1-6.3          | Samples and Experiments   | January 1   |
| Quiz 10 | 7.1-7.3          | Estimation and Confidence Intervals for Proportions                         | January 6   |
| Quiz 11 | 7.4-7.5          | Confidence Intervals for Means  | January 7   |
| Quiz 12 | 8.1-8.2          | Hypothesis tests for one sample mean or proportion                          | January 8   |
| Quiz 13 | 8.3-8.5          | Hypothesis test for two or more samples and Chi-square Goodness of Fit test | January 9   |

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## INSTRUCTIONS FOR HOMEWORK

- There are assignments due every Tuesday and Thursday at 11:59 pm.
- The weekly homework will be worth 15 points.
- The homework will be submitted in the CASA CourseWare website under the Assignments tab. See [Instructions to upload homework in CASA](#) for how to upload the homework.
- Two of the lowest homework scores will be dropped.
- The following table gives the due dates and the sections covered for each homework assignments.
- 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.

| <b>Assignment</b> | <b>Sections</b> | <b>Topic Covered</b>   | <b>Due Date</b> |
|-------------------|-----------------|--|-----------------|
| Homework 1        | Chapter 1       | Descriptive Statistics   | December 17     |
| Homework 2        | Chapter 2       | Introduction to Probability  | December 19     |
| Homework 3        | Chapter 3       | Discrete Random Variables, Binomial and Geometric Distributions          | December 24     |
| Homework 4        | Chapter 4       | Continuous Random Variables, Normal Distribution, Sampling Distributions | December 26     |
| Homework 5        | Chapter 5       | Bivariate Data, Correlations, Regressions, Residuals                     | December 31     |
| Homework 6        | Chapter 6       | Sampling and Experiments   | January 2       |
| Homework 7        | Chapter 7       | Confidence Intervals   | January 7       |
| Homework 8        | Chapter 8       | Hypothesis Testing   | January 9       |

## 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 and exams. Thus late work or make-ups will not be accepted unless extenuating circumstances arise as described in the MATH 13XX policy document.
- The following is calculated for the final grade:
  - Two of the lowest homework assignments are dropped.
  - One of the lowest online quizzes are dropped.
  - 85% of the total number of popper questions will be the 100%.
  - The final exam score can replace the lowest exam score out of three.
- 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.

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## **EXAM INFORMATION**

### **MIDTERM EXAMS**

**Exam 1: Covers chapters 1, 2 and 3; January 3 (11:00 am – 12:00pm)**

**Exam 2: Covers chapters 4, 5 and 6; January 6 (11:00 am – 12:00pm)**

**Exam 3: Covers chapters 7 and 8; January 10 (11:00am – 12:00pm)**

- All sections of Math 2311 take common exams.
- The exams given in CASA will consist of either multiple choice or a combinations of multiple choice and free response questions.
- The free response questions will be graded by the instructors and teaching assistants for all sections of Math 2311.
- Please make any arrangements (work, child-care, transportation, etc.) for these exam dates immediately.
- There are practice exams available. 5% of the score that you receive for the practice test that is online in the CASA CourseWare site under the Online Assignments will be added to your test score as extra credit.

### **COURSE POLICY QUIZ**

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 failure to complete the Course Policy Quiz, will be scored as Zero.

### **Required Reading**

The textbook, online quizzes, and additional help materials will be made available by logging into CourseWare at <http://www.casa.uh.edu>. The first portion of these materials are 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. A Course Access Code must be purchased for \$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.

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## LECTURE SCHEDULE

The lecture schedule will be available on casa, in the provided course calendar. Be certain to check regularly in case there are any changes to deadlines or lecture scheduling.

## COMPUTER REQUIREMENT

- Knowledge of a statistical package is an indispensable part of the modern statistics. The class presentations, some homework assignments, and the exams are computer based.
- The statistical package R-studio 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 on to your personal computer. This will be available to you for your exams in CASA.
- You first need to download R: <http://cran.cnr.berkeley.edu/>
- Then you can download Rstudio: <https://www.rstudio.com/>
- There is now a second option of access RStudio through the cloud at: <https://rstudio.cloud/>

## 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 <http://www.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.

- **Homework:** Assigned homework is generally due at midnight of the day after the lecture on the material. *\*Exceptions may be made per the Student Academic Adjustments/Auxiliary Aids Policy for students with approved CSD accommodations (see above).*
- **Rescheduling and Make-ups:** It may be possible to reschedule a test appointment during the testing period (depending on space availability) by using the online scheduler. Do not assume that you will be able to reschedule - check first for availability.

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Your final exam score will replace your lowest midterm exam score if the former is higher. The replacement will occur at the end of the semester after the Letter Grade Calculator (LGC) is turned off. A missed test will result in a score of zero. If you miss two or more exams, only one of those scores will be replaced. There will be no make-up tests or "re-tests". *\*Exceptions may be made per the Student Academic Adjustments/Auxiliary Aids Policy for students with approved CSD accommodations (see above).*

- For more information and policy see: <http://www.uh.edu/nsm/math/undergraduate/courses/math13xx/>

## 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 ([www.uh.edu/caps](http://www.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.

[http://www.uh.edu/caps/outreach/lets\\_talk.html](http://www.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 – Garrison 222 see: <http://www.uh.edu/casa/tutoring-center/>
  - LAUNCH – Cougar Village 1 N109 see: <http://ussc.uh.edu/lss/tutoring.aspx>
- For more information about the UH academic honesty policy and procedures see: <http://www.uh.edu/provost/policies/honesty/documents-honesty/academic-honesty-policy.pdf>

## DISTANCE EDUCATION

If you live more than 100 miles from the UH-Central Campus or have a medical condition making it impossible for you to travel to the campus for testing purposes, you may contact Proctored Exams Services: The University of Houston's Online & Special Programs (OSP) office facilitates all proctoring services for online students at the University. Information about proctoring and how to submit a proctoring request form can be found on the Proctoring Services page, <http://www.uh.edu/online/students/proctoring-students.php>. Prior to submitting a request, students should read and understand the proctoring processes and requirements. Questions or concerns about proctoring services can be directed to the OSP office at 713-743-3327 or [proctoring@uh.edu](mailto:proctoring@uh.edu). Hours of operation are Monday-Friday, 8:00 a.m.- 5:00 p.m., except for University holidays.