COURSE SYLLABUS – MATH 1342

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SEMESTER COURSE OFFERED: Fall 2021

COURSE NUMBER: MATH 1342 – 04 *[Formally MATH 2311]*

CRN: 12292

NAME OF COURSE: Elementary Statistical Models

INSTRUCTOR: Dr. Matthew Caputo, Office: PGH 202, mgcaputo@central.uh.edu   or   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 1314.
- 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	4%
Online Quizzes	10%
Homework	10%
Exams (3 exams)	51% (17% each)
Final Exam	25%

Note: The percentage grade on the final exam can be used to replace your lowest test score.

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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

INSTRUCTIONS FOR POPPERS

- 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.
- These problems will be presented during the lecture (as well as in the Completed Notes and Recorded Sessions, if applicable), and must be answered within the allowed timeframe 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% (not to exceed 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, which will count as 100%.

INSTRUCTIONS FOR QUIZZES

- All of the quizzes are open and will close every Saturday at 11:59 pm starting on September 4th.
- The quizzes can be 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	September 4
Quiz 2	2.1-2.4	Counting Techniques, Sets and Probabilities	September 11
Quiz 3	2.4-3.1	Discrete Random Variables	September 18
Quiz 4	3.2-3.3	Binomial and Geometric Distributions	September 25
Quiz 5	4.1-4.3	Continuous Random Variables and Normal Distribution	October 2
Quiz 6	4.3-4.4	Standard Normal and Sampling Distributions	October 9
Quiz 7	5.1-5.3	Scatterplots, Correlation, Regression	October 16
Quiz 8	5.4-5.6	Residuals, Non-Linear Models, and Relations in Categorical data	October 23
Quiz 9	6.1-6.3	Samples and Experiments	October 30
Quiz 10	7.1-7.3	Estimation and Confidence Intervals for Proportions	November 6
Quiz 11	7.4-7.5	Confidence Intervals for Means	November 13
Quiz 12	8.1-8.2	Hypothesis tests for one sample mean or proportion	November 20
Quiz 13	8.3-8.5	Hypothesis test for two or more samples and Chi-square Goodness of Fit test	December 4

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<u>INSTRUCTIONS FOR HOMEWORK</u>
- There are assignments due every Wednesday at 11:59 pm starting on September 8th.
- The weekly homework will be worth 20 points.
- The homework will be submitted in the CASA CourseWare website under the EMCF tab.
- 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.

Assignment	Sections	Topic Covered	Due Date
Homework 1	1.1 – 1.5	Descriptive Statistics	September 8
Homework 2	2.1 – 2.4	Introduction to Probability	September 15
Homework 3	3.1 – 3.2	Discrete Random Variables, Binomial Distributions	September 22
Homework 4	3.3 – 4.2	Geometric Distributions, Continuous Random Variables, Normal Distribution	September 29
Homework 5	4.3 – 4.4	Normal Distributions, Sampling Distributions	October 6
Homework 6	5.1 – 5.3	Scatterplots, Correlation, and Regression	October 13
Homework 7	5.4 – 5.6	Residuals, Non-linear Models, and Relations in Categorical data	October 20
Homework 8	6.1 – 6.3	Sampling and Experiments	October 27
Homework 9	7.1 – 7.3	Estimation and Confidence Intervals for Proportions	November 3
Homework 10	7.4 – 7.5	Confidence Intervals for Means	November 10
Homework 11	8.1 – 8.2	Hypothesis Tests for means and proportions	November 17
Homework 12	8.3 – 8.5	Mixed Hypothesis Testing, Chi-Squared Tests	December 1

<u>LATE ASSIGNMENT, MAKE-UP AND INCOMPLETE POLICIES</u>
- 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 without a valid excuse, explained below.
- 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 (limited to 25% of course assignments).

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<u>**EXAM INFORMATION**</u>
<u>MIDTERM EXAMS</u>
Exam 1: Covers chapters 1, 2 and 3; September 23 – 25
Exam 2: Covers chapters 4, 5 and 6; October 28 – 30
Exam 3: Covers chapters 7 and 8; December 2 – 4

- All sections of MATH 1342 take common exams.
- The three exams will be administered in-person, on campus at one of the three CASA testing centers (specific location will be available within two weeks prior to the exam date).
- You can access the scheduler two weeks prior to the exam for these exams by logging into Courseware.
- The exams given in CASA will consist of multiple choice questions.
- The multiple choice questions will be machine graded.
- The scheduler will be available approximately 2 weeks prior to the start of the exam cycle. The scheduler is accessed through the Proctor Exams tab at the top of the course page in CASA.
- 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.

<u>FINAL EXAM</u>
- There a comprehensive final exam. **December 11 – 14**
- You can access the scheduler for this exam by logging into Courseware.
- Any student with a course average of 80% or above at the start of Finals Week (December 5), may decide to "opt-out" of the Final Exam and use that course average as their Final Grade. Information will be provided at that time.

<u>COURSE POLICY QUIZ</u>
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.

Instructor Tutoring Hours
Instructors will offer tutoring hours online, through Microsoft Teams, on a regular schedule. If you need to speak to your instructor in-person, this must be done by appointment only and at the instructor's discretion (if your instructor feels the issue does not warrant an in-person meeting, a virtual meeting will be done instead).

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<u>**LECTURE SCHEDULE**</u>
This table is tentative and may need to be updated during the semester. Updates will be announced in lecture and posted on the course

Week	Textbook Sections	Topics
Weeks 1	Course Intro Sec 1.1 – 1.4	Types of Data, Univariate Descriptive Statistics (Central Tendency, Spread, Percentiles and Quantiles)
Week 2	Sec 1.5 – 2.1	Statistical Graphs, Counting Techniques
Week 3	Sec 2.2 – 2.4	Sets, Venn Diagrams, Probability Rules
Week 4	Sec 3.1 – 3.2	Discrete Random Variables, Binomial
Week 5	Sec 3.3 – 4.1, Test 1	Geometric Distributions, Density Curves, Test 1 Review
Week 6	Sec 4.2 – 4.4	Introduction to Normal Distribution, Sampling Distributions
Week 7	Sec 5.1 – 5.3	Scatterplots, Correlation, Least-Squares Regression
Week 8	Sec 5.4 – 5.6	Residuals, non-linear models, Contingency tables
Week 9	Sec 6.1 – 6.3	Samples, Experiments and Simulations
Week 10	Test 2, Sec 7.1 - 7.2	Confidence intervals for one sample proportion, Test 2 Review
Week 11	Sec 7.3 – 7.4	Confidence Intervals for one sample mean, two sample means
Week 12	Sec 7.5 – 8.1	Two proportion intervals, Introduction to Hypothesis Test,
Week 13	Sec 8.2 – 8.4	Hypothesis test for one mean & one proportion, two means, two proportions
Week 14	Sec 8.5 – 8.6, Test 3	Chi-square test tests, Test 3 Review
Week 15	Final Exam Review	Final Exam Review

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: https://cran.rstudio.com/
- Then you can download Rstudio: https://rstudio.com/products/rstudio/download/#download
- Or access an online version of R-Studio through http://129.7.181.58/cgi-bin/irs

REASONABLE ACADEMIC ADJUSTMENTS/AUXILIARY AIDS
The University of Houston 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 disabled students. In accordance with Section 504 and ADA guidelines, UH 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 contact the Justin Dart Jr. Student Accessibility Center (formerly the Justin Dart, Jr. Center for Students with DisABILITIES).

- **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.

  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/

Religious Holy Days: Students whose religious beliefs prohibit class attendance or the completion of specific assignments on designated dates may obtain an excused absence. To do so, please make a written request for an excused absence and submit it to your instructor as soon as possible, to allow the instructor to make arrangements. For more information, see the Student Handbook. http://catalog.uh.edu/index.php

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) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. Also, there is no appointment necessary for the "Let's Talk" program, which is a drop-in consultation service at convenient locations and hours around campus.

Face Covering Policy:
To reduce the spread of COVID-19, the University strongly encourages everyone (vaccinated or not) to wear face coverings indoors on campus including classrooms for both faculty and students.

Presence in Class
Your presence in class each session means that you:

- Are NOT exhibiting any Coronavirus Symptoms that makes you think that you may have COVID-19
- Have NOT tested positive or been diagnosed for COVID-19
- Have NOT knowingly been exposed to someone with COVID-19 or suspected/presumed COVID-19

If you are experiencing any COVID-19 symptoms that are not clearly related to a pre-existing medical condition, do not come to class. Please see Student Protocols for what to do if you experience symptoms and Potential Exposure to Coronavirus for what to do if you have potentially been exposed to COVID-19. Consult the (select: Undergraduate Excused Absence Policy or Graduate Excused Absence Policy) for information regarding excused absences due to medical reasons.

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COVID-19 Information
Students are encouraged to visit the University's COVID-19 website for important information including on-campus testing, vaccines, diagnosis and symptom protocols, campus cleaning and safety practices, report forms, and positive cases on campus. Please check the website throughout the semester for updates.

Vaccinations
Data suggests that vaccination remains the best intervention for reliable protection against COVID-19. Students are asked to familiarize themselves with pertinent vaccine information, consult with their health care provider. The University strongly encourages all students, faculty and staff to be vaccinated.

Excused Absence Policy
Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy and Graduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

Recording of Class
Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the Justin Dart, Jr. Student Accessibility Center. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with *anyone* without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes
Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through posting through casa and by email (to your UH email account).

Resources for Online Learning
The University of Houston is committed to student success, and provides information to optimize the online learning experience through our Power-On website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, and Blackboard; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

UH Email
Please check and use your Cougarnet email for communications related to this course. To access this email, login to your Microsoft 365 account with your Cougarnet credentials.

Webcams

Access to a webcam is required for students participating remotely in this course. Webcams must be turned on when you are taking a make-up exam that has been approved by your instructor. It is recommended to turn on your webcam during virtual tutoring sessions as well.

Honor Code Statement

Students may be asked to sign an honor code statement as part of their submission of any graded work including but not limited to projects, quizzes, and exams: "*I understand and agree to abide by the provisions in the University of Houston Undergraduate Academic Honesty Policy. I understand that academic honesty is taken very seriously and, in the cases of violations, penalties may include suspension or expulsion from the University of Houston.*"

Helpful Information

> **COVID-19 Updates**: https://uh.edu/covid-19/

> **Coogs Care**: https://www.uh.edu/dsaes/coogscare/

> **Laptop Checkout Requests**: https://www.uh.edu/infotech/about/planning/off-campus/index.php#do-you-need-a-laptop

> **Health FAQs**: https://uh.edu/covid-19/faq/health-wellness-prevention-faqs/

> **Student Health Center**: https://uh.edu/class/english/lcc/current-students/student-health-center/index.php

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