



## Mathematics Southeast College

Math 1342: Elementary Statistical Methods  
CRN 36845 – Fall/2017

Eastside campus AM309.1 | 8:00PM-9:50PM | Mon and Wed  
3 hour lecture course / 48 hours per semester/ 12 weeks

**Textbook:** *Elementary Statistics, A step by step Approach*, 10<sup>th</sup> Edition, Bluman.  
ISBN-13: 9781260273946

**Instructor:** Sherry Liu

**Instructor Contact Information:** Sherry.Liu@hccs.edu and 713-718-6913

**Office location and hours:** Felix Morales Building Rm 124E.

Monday	8:45AM – 9:15AM	11:00AM-11:30 AM
Tuesday	8:45AM – 9:15AM	12:30PM – 1:30 PM
Wednesday	8:45AM – 9:15AM	11:00AM-11:30 AM
Thursday	8:45AM – 9:15AM	12:30PM – 1:30 PM

More hours could be added during the semester as needed.

### Course Description

MATH 1342: Statistics. Topics include histograms, measures of central tendency and variation, probability, binomial and normal distributions, and their applications, confidence intervals, and tests of statistical hypotheses.

### Prerequisites

MATH 0312 or the equivalent. or an acceptable placement test score.

### Course Goal

This course is intended for students primarily in health sciences and business rather than math or science majors. It consists of concepts, ideas, and applications of statistics rather than a theory course.

### Course Student Learning Outcomes (SLO):

1. Explain the use of data collection and statistics as tools to reach reasonable conclusions.
2. Recognize, examine and interpret the basic principles of describing and presenting data.
3. Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
4. Explain the role of probability in statistics.
5. Examine, analyze and compare various sampling distributions for both discrete and continuous random variables.
6. Describe and compute confidence intervals.
7. Solve linear regression and correlation problems.
8. Perform hypothesis testing using statistical methods.

**Course Objectives:** Upon completion of this course, a student should be able to:

1. Demonstrate knowledge of statistical terms.
2. Understand the different between descriptive and inferential statistics.
3. Identify: types of data, measurement level of variables, and four basic sampling techniques.
4. Construct the relative frequency table from a given set of ungroup data.
5. Know and use the different graphs: histogram, frequency polygon, Ogives, Pareto, and pie to present data.
6. Compute the mean, median, mode, midrange, range, variance, and standard deviation.
7. Identify the various measures of position such as percentiles, deciles, and quartiles.
8. Find the total number of outcomes in a sequence of events using tree diagram and multiplication rule.
9. Understand the use of permutation and combination rules.
10. Determine sample spaces and find the probability of an event using classical probability.
11. Find the probability of compound events using addition and/or multiplication rules.
12. Find the conditional probability of an event
13. Construct a probability distribution for a random variable
14. Find the mean, variance, and expected value for a probability distribution function.
15. Find the exact probability for X successes in n trial of a binomial experiment.
16. Find the mean, variance, and standard deviation for binomial distribution.
17. Identify the properties of the normal distribution.

18. Find the area under the normal curve, given various z values.
19. Find probabilities for a normally distributed variable by transforming it into a standard normal variable.
20. Find specific data values for given percentages using the standard normal distribution.
21. Apply the central limit theorem to solve problems involving sample means.
22. Use the normal approximation to compute probabilities for a binomial variable.
23. Find a confidence interval for the mean when  $\sigma$  is known or  $n \geq 30$ .
24. Determine the minimum sample size for finding a confidence interval for the mean.
25. Find a confidence interval for the mean when  $\sigma$  is unknown and  $n < 30$ .
26. Find a confidence interval for proportion.
27. Determine the minimum sample size for finding a confidence interval for a proportion.
28. Find a confidence interval of variance and standard deviation.
29. Understand the definitions used in hypothesis testing.
30. State null hypothesis and alternative hypothesis.
31. Understand the terms: type I error and type II error, test criteria, level of significance, test statistic.
32. Find the critical values for the z-test, t-test, and  $F$ -test.
33. Test hypothesis for: means (large and small sample), proportions, variance, and standard deviation.
34. Draw scatter plot for a set of ordered pairs.
35. Compute the correlation coefficient and the coefficient of determination.
36. Compute the equation of the regression line by using the least square method.
37. Test a distribution for goodness of fit using chi-square.
38. Test independence and homogeneity using chi-square.
39. Use the one-way ANOVA technique to determine if there is a significant difference among three or more means. Determine differ in means using the Scheffe' or Tukey test if the null hypothesis is rejected in the ANOVA.

### **Core Objectives**

Given the rapid evolution of necessary knowledge and skills and the need to take into account global, national, state, and local cultures, the core curriculum must ensure that students will develop the essential knowledge and skills they need to be successful in college, in a career, in their communities, and in life. Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

**Critical Thinking Skills:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

**Communication Skills:** to include effective development, interpretation and expression of ideas through written, oral and visual communication.

**Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

### **TENTATIVE CALENDAR**

Week 1	1.1 Descriptive and Inferential Statistics 1.2 Variables and Types of Data 1.3 Data Collection and Sampling Techniques 1.4 Experimental Design 1.5 Computers and Calculators 2.1 Organizing Data 2.2 Histograms, Frequency Polygons and Ogives 2.3 Other Types of Graphs
Week 2	3.1 Measures of Central Tendency 3.2 Measure of Variation 3.3 Measures of Position 3.4 Exploratory Data Analysis 4.1 Sample Spaces and Probability 4.2 The Addition Rules for Probability
Week 3	4.3 The Multiplication Rules and Conditional Probability 4.4 Counting Rules 4.5 Probability and Counting Rules

	Test 1 over Chapters 1-4
Week 4	5.1 Probability Distributions 5.2 Means, Variance, Standard Deviation and Expectation 5.3 The Binomial Distribution 5.4 Other Types of Distribution
Week 5	6.1 Normal Distributions 6.2 Applications of Normal Distribution 6.3 The Central Limit Theorem 6.4 The Normal Approximation to the Binomial Distribution
Week 6	7.1 Confidence Intervals for the Mean When Variance is known 7.2 Confidence Intervals for the Mean When Variance is unknown 7.3 Confidence Intervals and Sample Size for Proportions 7.4 Confidence Intervals for Variance and Standard Deviations
Week 7	Test 2 over Chapters 5-7 8.1 Steps in Hypothesis Testing 8.2 z Test for a Mean 8.3 t Test for a Mean 8.4 z Test for a Proportion
Week 8	9.1 Testing the Difference Between Two Means using z Test 9.2 Testing the Difference Between Two Means of Independent Samples using t Test 9.3 Testing the Difference Between Two means Dependent Samples 9.4 Testing the Difference Between Proportions 9.5 Testing the Difference Between two Variances
Week 9	Test 3 Over Chapters 8-9 Thanksgiving
Week 10	10.1 Scatter Plots and Correlation 10.2 Regression
Week 11	10.3 Coefficient of Determination and Standard Error of the Estimate Final Exam Review
Week 12	Comprehensive Final Exam on Monday December 11 <sup>th</sup> 8:00PM

### Instructional Methods

This is a lecture based math class that meets twice a week. Homework and reading assignments will be assigned from the course textbook. Students will be expected to read the textbook, work on homework assignments, study for exams, participate in classroom activities, and attend class. In this course, you will be involved in discussion with your classmates and your instructors. As you will want to contribute to these discussions, you will need to come to class prepared to discuss, analyze, and evaluate information from your text and notes.

### Student Assignments

Practice problems will be assigned from the course textbook. Students should read assigned sections from the textbook before attempting the exercises. Homework should be maintained in a notebook. Students are encouraged to work together and bring questions to class.

There could be any number of pop quizzes through out the semester. Scores from quizzes could help improve your final grade.

There are 3 exams and a comprehensive final exam. Students should study and practice homework assignments to prepare for tests. You must show your work on exams to receive credit.

Students may use a calculator for tests. However, forgetting to bring a calculator is not an excuse to use a cell phone, electronic device or share with a neighbor.

There will be no make-up exams under any circumstances.

### Assessments

Exam 1	100 points
Exam 2	100 points
Exam 3	100 points

Final Exam 200 points  
 Your percentage grade = (Exam 1 + Exam 2 + Exam 3 + Final Exam) / 5

**HCC Policy Statement - ADA**

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to <http://www.hccs.edu/district/students/disability-services/>

**Ability Services Contact Information**

Central College	713-718-6164	
Coleman College	713-718-7376	
Northeast College	713-718-8322	
Northwest College	713-718-5422	713-718-5408
Southeast College	713-718-7144	
Southwest College	713-718-5910	
Adaptive Equipment/Assistive Technology	713-718-6629	713-718-5604
Interpreting and CART services	713-718-6333	

**HCC Policy Statement: Title IX**

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual’s fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status-in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

*David Cross*  
 Director EEO/Compliance  
 Office of Institutional Equity & Diversity  
 3100 Main  
 Houston, TX 77266-7517 or [Institutional.Equity@hccs.edu](mailto:Institutional.Equity@hccs.edu)  
 Phone number: 713-718-8271

**Campus Carry statement:**

At HCC the safety of our students, staff, and faculty is our first priority. As of August 1, 2017, Houston Community College is subject to the Campus Carry Law (SB11 2015). For more information, visit the HCC Campus Carry web page at <http://www.hccs.edu/district/departments/police/campus-carry/>.”

**HCC Policy Statement: Academic Honesty**

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. “Scholastic dishonesty”: includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another students’ test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;

- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of a test not yet administered;
- Bringing another person to obtain a test that is to be administered.

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook)

**Any student caught cheating during a test will receive a zero on that exam.**

### **HCC Policy Statements**

*Class Attendance - It is important that you come to class!* Attending class regularly is the best way to succeed in this class. Research has shown that the single most important factor in student success is attendance. Simply put, going to class greatly increases your ability to succeed. You are expected to be on time at the beginning of each class period. For complete information regarding Houston Community College's policies on attendance, please refer to the Student Handbook. You are responsible for materials covered during your absences. Class attendance is checked daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences. **Class attendance is checked daily.**

If you are not attending class, you are not learning the information. As the information that is discussed in class is important for your career, **students may be dropped from a course after accumulating absences in excess of six (6) hours of instruction.** The six hours of class time would include any total classes missed or for excessive tardiness or leaving class early.

You may decide NOT to come to class for whatever reason. As an adult making the decision not to attend, you do not have to notify the instructor prior to missing a class. However, if this happens too many times, you may suddenly find that you have "lost" the class.

Poor attendance records tend to correlate with poor grades. If you miss any class, including the first week, you are responsible for all material missed. It is a good idea to find a friend or a buddy in class who would be willing to share class notes or discussion or be able to hand in your work if you unavoidably miss a class

### **HCC Course Withdrawal Policy**

If you feel that you cannot complete this course, you will need to withdraw from the course prior to the final date of withdrawal. Before, you withdraw from your course; please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course. Your success is very important. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than **SIX** total course withdrawals **throughout** their educational career in obtaining a certificate and/or degree.

To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor *may* "alert" you and HCC counselors that you might fail a class because of excessive absences and/or poor academic performance. It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

If you plan on withdrawing from your class, you **MUST** contact a HCC counselor or your professor prior to withdrawing (dropping) the class for approval and this must be done **PRIOR** to the withdrawal deadline to receive a "W" on your transcript. **\*\*Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online registration calendars, HCC schedule of classes and catalog, any HCC Registration Office, or any HCC counselor to determine class withdrawal deadlines. *Remember to allow a 24-hour response time when communicating via email and/or telephone with a professor and/or counselor. Do not submit a request to discuss withdrawal options less than a day before the deadline.* If you do not withdraw before the deadline, you will receive the grade that you are making in the class as your final grade. **The last day to withdraw is Monday 11/13/2017 in order to receive a W.****

### **Repeat Course Fee**

The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success,

students who repeat the same course more than twice, are required to pay extra tuition. The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

**Classroom Behavior**

As a student active in the learning community of this course, it is your responsibility to be respectful of the learning atmosphere in your classroom. To show respect of your fellow students and instructor, you will turn off your phone and other electronic devices, and will not use these devices in the classroom unless you receive permission from the instructor.

**Misuse of Electronic Devices in the Classroom**

The use of electronic devices by students in the classroom is up to the discretion of the instructor. Any use of such devices for purposes other than student learning is strictly prohibited unless authorized as an appropriate ADA accommodation from the ADA Counselor.

**Instructor Requirements**

I expect every student to be very active in this course by doing all the reading and practice assignments. Remember that the homework is designed to help prepare you for the exams.

**Grading Scale**

Only students who are withdrawn from the course before the official withdrawal date will be eligible for a grade of “W”. The instructor cannot assign a grade of W.

- 90 - 100 = A
- 80 - 89 = B
- 70 - 79 = C
- 60 - 69 = D
- Below 60 = F

**Personal Communication Device Policy:**

All personal communication devices (any device with communication capabilities including but not limited to cell phones, blackberries, pagers, cameras, palmtop computers, lap tops, PDA's, radios, headsets, portable fax machines, recorders, organizers, databanks, and electronic dictionaries or translators) must be muted or turned off during class. Such activity during class time is deemed to be disruptive to the academic process. Personal communication devices are to not be on the student desk during examinations. Usage of such devices during exams is expressly prohibited during examinations and will be considered cheating (see academic honesty section above).

**Student Course Reinstatement Policy:**

Students have a responsibility to arrange payment for their classes when they register, either through cash, credit card, financial aid, or the installment plan. Faculty members have a responsibility to check their class rolls regularly, especially during the early weeks of a term, and reconcile the official class roll to ensure that no one is attending class whose name does not appear on it. Students who are dropped from their courses for nonpayment of tuition and fees who request reinstatement after the official date of record (OE Date) can be reinstated by making payment in full and paying an additional \$75 per course reinstatement fee. A student requesting reinstatement should present the registrar with a completed **Enrollment Authorization Form** with the signature of the instructor, department chair, or dean who should verify that the student has been attending class regularly. Students who are reinstated are responsible for all course policies and procedures, including attendance requirements.

**Resources:**

The HCC Tutoring Centers provide free tutoring for individual subjects offered at specific times throughout the week on various campuses. There is no need to make an appointment. If you need a tutor, visit: [www.hccs.edu/findatutor](http://www.hccs.edu/findatutor) for times and locations. For more information about tutoring at HCC, visit [www.hccs.edu/district/students/tutoring](http://www.hccs.edu/district/students/tutoring).

Additional help is also available through Student Support Services. Students can get free assistance, 24 hours a day, 7 days a week, in Math, English and other subjects, at <https://hccs.upswing.io/>. Typically, posted questions are answered by an HCC tutor

or faculty within 24 hours (usually under 6 hours). There are also several online math resources that you can find with an internet search. You may also find information on the Learning Web site accessible through your specific HCCS campus website.

**EGLS<sub>3</sub> -- Evaluation for Greater Learning Student Survey System**

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term. Visit [www.hccs.edu/EGLS3](http://www.hccs.edu/EGLS3) for more information.

**Administration contact information**

**College - Level Math Courses**

Chair of Math	Jaime Hernandez	SW Campus	713-718-2477	Stafford, Scarcella, N108
- Admin. Assistant	Tiffany Pham	SW Campus	713-718-7770	Stafford, Scarcella, N108
- Admin. Assistant	Dipal Parekh	SW Campus	713-718-2477	Stafford, Scarcella, N108
Math Assoc. Chair	Clen Vance	CE Campus	713-718-6421	San Jacinto Building, Rm 369
Math Assoc. Chair	Ernest Lowery	NW Campus	713-718-5512	Katy Campus Building, Rm 112
Math Assoc. Chair	Mahmoud Basharat	NE Campus	713-718-2438	Codwell Hall Rm 105

**Developmental Math Courses**

Chair of Dev. Math	Susan Fife	SE Campus	713-718-7241	Felix Morales Building, Rm 124
- Admin. Assistant	Carmen Vasquez	SE Campus	713-718-7056	Felix Morales Building, Rm 124
Dev. Math Assoc. Chair	Marisol Montemayor	SE Campus	713-718-7153	Felix Morales Building, Rm 124
Dev. Math Assoc. Chair	Jack Hatton	NE Campus	713-718-2434	Northline Building, Room 321

For issues related to your class, please first contact your instructor.  
 If you need to contact departmental administration, then contact the appropriate Associate Chair.  
 If further administrative contact is necessary, then contact the appropriate Department Chair.