Mathematics

College Level
Statistics: MATH 1342
Fall Semester – CRN 12307
3 hour lecture course | 48 hours per semester| 16 weeks
Online Instruction | In-Person Final Exam
Textbook: *Elementary Statistics, A Step by Step Approach,* 9th Edition, Allan G. Bluman
ISBN: 978-0-781-3633-7

FIRST DAY OF CLASS

Monday, August 22, 2016

INSTRUCTOR

Kimber Kaushik

CONTACT INFORMATION

kimber.kaushik@hccs.edu, 713/718-5733

OFFICE LOCATION

Rm. 359 H at Northwest College's Katy Campus (1550 Fox Lake Dr, Houston, TX 77084)

OFFICE HOURS

Please feel free to contact me concerning any problems that you are experiencing in this course. You do not need to wait until you have received a poor grade before asking for my assistance. Your performance in my class is very important to me. I am available to hear your concerns and to discuss course topics. Feel free to call or come by my office anytime during these hours.

Monday 12 – 2 pm; Tuesday 5 – 6 pm; Wednesday 12 – 2 pm

COURSE DESCRIPTION (ACGM)

Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Use of appropriate technology is recommended.

HCC CATALOG 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. 3 credits (lecture).

COURSE PREREQUISITES

A grade of C or better in Math 0312 or a grade of C or better in MATH 1314 or its 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)

The student will be able to

- Understand basic concepts and vocabulary for probability and statistics.
- Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by using tables, graphs, measures of central tendency, and measures of dispersion.
- Collect univariate and bivariate data, and interpret and communicate the results using statistical analyses such as confidence intervals, hypothesis tests, and regression analysis.
- Calculate probabilities for binomial and normal probability distributions and find specific values for binomial and normal probabilities.
- Successfully perform testing of hypotheses using Standard Normal values and *t*–distribution values.

LEARNING OBJECTIVES

Students will

1.1 Demonstrate knowledge of statistical terms.
1.2 Understand the difference between descriptive and inferential statistics.
1.3 Identify types of data, measurement level of variables, and four basic sampling techniques.
2.1 Construct the relative frequency table from a given set of ungrouped data.
2.2 Know and use the different graphs (histogram, frequency polygon, Ogives, Pareto, and pie) to present data.
2.3 Compute the mean, median, mode, midrange, range, variance, and standard deviation.
2.4 Identify the various measures of position such as percentiles, deciles, and quartiles.
2.5 Find the total number of outcomes in a sequence of events using a tree diagram and the multiplication rule.
3.1 Understand the use of permutation and combination rules.
3.2 Determine sample spaces and find the probability of an event using classical probability.
3.3 Find the probability of compound events using addition and/or multiplication rules.
3.4 Find the conditional probability of an event
3.5 Construct a probability distribution for a random variable
3.6 Find the mean, variance, and expected value for a probability distribution function.
3.7 Find the mean, variance, and standard deviation for a binomial distribution.
3.8 Identify the properties of the normal distribution.
3.9 Find a confidence interval for the mean when s is known or $n > 30$.
3.10 Determine the minimum sample size for finding a confidence interval for the mean.
3.11 Find a confidence interval for the mean when s is unknown and $n < 30$.
3.12 Find a confidence interval for a proportion.
3.13 Determine the minimum sample size for finding a confidence interval for a proportion.
3.14 Find a confidence interval of the variance and standard deviation.
4.1 Find the exact probability for X successes in n trials of a binomial experiment.
4.2 Find the area under the normal curve, given various z values.
4.3 Find probabilities for a normally distributed variable by transforming it into a standard normal variable.

4.4 Find specific data values for given percentages using the standard normal distribution.
4.5 Apply the central limit theorem to solve problems involving sample means.
4.6 Use the normal approximation to compute probabilities for a binomial variable.
5.1 Understand the definitions used in hypothesis testing.
5.2 State the null hypothesis and alternative hypothesis.
5.3 Understand the terms: type I error and type II error, test criteria, level of significance, test statistic.
5.4 Find the critical values for the *z*-test, *t*-test, and *c*-test.
5.5 Test hypothesis for means (large and small sample), proportions, variance, and standard deviation.
5.6 Draw a scatter plot for a set of ordered pairs.
5.7 Compute the correlation coefficient and the coefficient of determination.
5.8 Compute the equation of the regression line by using the least square method.
5.9 Test a distribution for goodness of fit using chi-square.
5.10 Test independence and homogeneity using chi-square.
5.11 Use the one-way ANOVA technique to determine if there is a significant difference among three or more means.
5.12 Determine the difference in means using the Scheffé or Tukey test if the null hypothesis is rejected in the ANOVA.

CORE CURRICULUM COMPETENCIES

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.

Students enrolled in this core curriculum course will participate in online discussions designed to cultivate the following core objectives:

Critical Thinking Skills

Creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Communication Skills

Effective development, interpretation and expression of ideas through written, oral and visual communication

Empirical and Quantitative Skills

Manipulation and analysis of numerical data or observable facts resulting in informed conclusions

CALENDAR

Class begins Unit One discussion available	Monday, August 22
Chapter 1 (Sections 1.1 – 1.4)	Week of Monday, August 22
Chapter 2 (Sections 2.1 – 2.3)	Week of Monday, August 29
Labor Day Holiday	Monday, September 5

Last day to drop the class without a grade	Tuesday, September 6
Chapter 3 (Sections 3.1 – 3.3)	Week of Tuesday, September 6
Unit One Review & Test (Chapters 1, 2 & 3)	Week of Monday, September 12 **Unit One due Sunday, September 18 at 11:59 pm**
Unit Two discussion available	Monday, September 19
Chapter 4 (Sections 4.1 – 4.5)	Week of Monday, September 19
Chapter 5 (Sections 5.1 – 5.3)	Week of Monday, September 26
Unit Two Review & Test (Chapters 4 & 5)	Week of Monday, October 3 **Unit Two due Sunday, October 9 at 11:59 pm**
Unit Three discussion available	Monday, October 10
Chapter 6 (Sections 6.1 – 6.4)	Week of Monday, October 10
Chapter 7 (Sections 7.1 – 7.4)	Week of Monday, October 17
Unit Three Review & Test (Chapters 6 & 7)	Week of Monday, October 24 **Unit Three due Sunday, October 30 at 11:59 pm**
Last day to withdraw from class (4:30 pm deadline)	Friday, October 28
Unit Four discussion available	Monday, October 31
Chapter 8 (Sections 8.1 – 8.5)	Week of Monday, October 31
Chapter 10 (Sections 10.1 – 10.3)	Week of Monday, November 7
Unit Four Review & Test (Chapters 8 & 10)	Week of Monday, November 14 **Unit Four due Sunday, November 20 at 11:59 pm**
Final Exam Review	Monday, November 21 – Wednesday, November 23
Thanksgiving Holiday	Thursday, November 24 – Sunday, November 27
Final Exam Review	Monday, November 28 – Thursday, December 1
Final Exam (in-person)	Friday, December 2 – Sunday, December 4

INSTRUCTIONAL METHODS

I want you to succeed. To do so, you must work consistently and not fall behind. I encourage you to work with your classmates on homework assignments and while preparing for tests. Ask me questions whenever they arise, and go to tutoring if you need more help. If you have suggestions for making the course better, let me know, especially if there are resources you'd like me to make available to you.

STUDENT ASSIGNMENTS

Assignments have been developed that will enhance your learning. To better understand a topic, you will be given assignments on key information that you will need to remember for your success in this class and later when you encounter statistics in your daily life and career. Students will be required to successfully complete the following:

Discussions

For each unit, you'll contribute one original post to a discussion in Eagle Online. Posts will be graded for accuracy, but you'll have the opportunity to improve your grade on each post by addressing my comments. Once you contribute your weekly post, I encourage you to respond to at least one of your classmates' posts.

Textbook Reading Assignments

You'll read a chapter of the course textbook before you begin associated assignments in Connect Math.

Videos

After you finish reading a textbook chapter, you'll view the associated video tutorials and video examples in Connect Math. These videos review vocabulary, concepts and methods in probability and statistics. Note that although your grades on video assignments in Connect Math will not affect your course average, you will benefit by watching each video closely.

Homework Assignments

In Connect Math, you'll complete a homework assignment for each chapter of the textbook that we cover in class.

Unit Reviews

To prepare for each unit test, you'll complete the associated unit review in Connect Math. Unit reviews are graded as homework assignments, and you must score at least 80% on the unit review to access the corresponding unit test.

Unit Tests

You'll take four unit tests, each accessed in Connect Math. Before you take a unit test, read the textbook, watch the videos and complete the homework assignments in the unit, as well as the corresponding unit review. After you submit a unit test, you can complete one quick retake, for full credit.

I'll replace your lowest unit test grade with the grade you make on the final exam, if that is to your advantage.

Final Exam Review

You can earn up to five bonus points on the final exam by completing the final exam review in Connect Math. Make sure you can do the problems with no other technology than a scientific or graphing calculator since you will not have computer access during the final exam.

Final Exam

The final exam is a paper-and-pencil test, has 33 multiple-choice questions, lasts two hours, and covers all material from class. The exam is CLOSED BOOK, AND NO NOTES ARE ALLOWED. You will not have access to a computer during the final exam; instead, you must answer questions using your own graphing or scientific calculator. I'll provide the formulas and statistical tables that you'll need during testing.

The final exam must be taken in person at a testing center in Houston on Friday, December 2, Saturday, December 3 or Sunday, December 4. If you live outside the Houston area, you will need to inform me and arrange for proctored testing near you. Refer to Eagle Online for testing times and locations, and for more information about out-of-area testing.

Materials needed for taking the final exam:

- Sharpened #2 pencils
- Eraser (Hi-Polymer erasers by Pentel are recommended)
- Picture ID
- Course information: MATH 1342, CRN 12307, Professor Kimber Kaushik
- *Scientific or graphing calculator*

When you arrive at a testing location, you must show your ID and provide the course information listed above. You'll be given a test booklet and a Scantron form. I'm proctoring each day, so please ask to be seated in my room.

Be sure to mark your answers carefully on your Scantron form.

STUDENT ASSESSMENTS

- Discussions for each of the four units
- Homework assignments for each chapter covered in class
- Reviews for Units One, Two, Three & Four
- Tests for Units One, Two, Three & Four
- Final Exam

INSTRUCTOR REQUIREMENTS

As your Instructor, it is my responsibility to**:**

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective online learning environment through video tutorials, homework assignments, unit reviews and unit tests in Connect Math, as well as PowerPoint presentations and forum discussions in Eagle Online
- Inform students of institutional and course policies
- Provide the course outline and class calendar which will include a description of any special projects or assignments

To be successful in this class, it is the student's responsibility to**:**

- Complete the required assignments and exams in Connect Math and Eagle Online, and take the in-person final exam
- Ask for help when there is a question or problem, going to tutoring when necessary

MASTERING THE MATERIAL

I suggest that you record your work in a math notebook. Be neat and highlight tricky problems. Writing your work in an organized manner helps you think clearly and gives you a record of your thought. You can then review the material as you study for unit tests and the final exam.

As the course progresses, I also suggest that you make study cards with important definitions and problem-solving techniques. I'll provide a formula sheet with the final exam, so you won't need to memorize formulas.

Free in-person tutoring is available at many HCC campuses. Another option is to use HCC's free Online Tutoring Services, available at www.hccs.askonline.net. Use your student ID or HCC e-mail address to create an account. Instructions, including a 5-minute video, are provided to make you familiar with the capabilities of this service. Of course, you are also welcome to visit or call me during my office hours.

PREPARING FOR THE FINAL EXAM

First, study the cards you've made for each chapter and review your unit tests.

Next, complete the online final exam review, showing your work neatly in your notebook so you can review it right before you take the final exam. If you have trouble with the final exam review, you can discuss it in the "Let's Help One Another" forum in Eagle Online or work on the review with classmates in one of the HCC tutoring labs or libraries.

Finally, be sure to get a good night's sleep the night before the final exam. Review your study cards the night before and the morning of the final exam, and eat a meal with protein before exam time.

HCC GRADING SCALE

A = 100 – 90……..4 points per semester hour
B = 89 – 80: ……..3 points per semester hour
C = 79 – 70: ……2 points per semester hour
D = 69 – 60: ……..1 point per semester hour
59 and below = F……0 points per semester hour
IP (In Progress) ……0 points per semester hour
W (Withdrawn)……0 points per semester hour
I (Incomplete)……..0 points per semester hour
AUD (Audit) ……0 points per semester hour

IP (In Progress) is given only in certain developmental courses. You must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. To compute your grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect your GPA.

GRADING CRITERIA

You can use your grades on discussions, homework assignments, reviews and tests to determine how successful you are at achieving the course learning outcomes (mastery of course content and skills) outlined in the syllabus. If you find you are not mastering the material and skills, you are encouraged to reflect on how you prepare for and execute each assignment. I encourage you to tell me how I can assist you in finding resources online or on campus that will improve your performance.

Grading Percentages

- 5%: Discussions
- 15%: Homework & Reviews
- 50%: Unit Tests
- 30%: Final Exam

INSTRUCTIONAL MATERIALS

Connect Math

All assignments EXCEPT THE DISCUSSIONS AND FINAL EXAM are accessed via the online program Connect Math (available at www.connectmath.com). On the first day of class, you'll find details about registering for Connect Math in Eagle Online.

Textbook

An electronic version of the textbook, *Elementary Statistics, A Step by Step Approach* (9th Edition, by Allan G. Bluman) comes with your Connect Math subscription.

If you want a hard copy of the textbook, you can purchase it at any HCC campus bookstore or online through many book ordering websites. If you buy the book on campus, it will come packaged with an access code for Connect Math. Please note that if you purchase the textbook elsewhere, it may not come packaged with Connect Math; in this case, you will have to pay separately for a Connect Math subscription.

Calculator

You will need a scientific or graphing calculator in this course.

HCC POLICY STATEMENTS

You can access Student Services Policies on ADA, academic honesty, student attendance, 3-peaters and the withdrawal deadline on the website:

http://central.hccs.edu/students/student-handbook/

Sexual Misconduct

Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights is on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance. It is important that every student understands and conforms to respectful behavior while at HCC. Sexual misconduct is not condoned and will be addressed promptly.

Log in to http://www.eduriskssolutions.org. Sign in using your HCC student email account, and then go to the button at the top right that says ***Login*** *and enter your student number.*

DISTANCE EDUCATION POLICIES

Access HCC Online Policies on their Web site

All students are responsible for reading and understanding the HCC Online Student Handbook, which contains policies, information about conduct, and other important information. For the HCC Online Student Handbook click on the link below or go to the HCC Online page on the HCC website.

The HCC Online Student Handbook contains policies and procedures unique to the HCC Online student. Students should have reviewed the handbook as part of the mandatory orientation. It is the student's responsibility to be familiar with the handbook's contents. The handbook contains valuable information, answers, and resources, such as HCC Online contacts, policies and procedures (how to drop, attendance requirements, etc.), student services (ADA, financial aid, degree planning, etc.), course information, testing procedures, technical support, and academic calendars. Refer to the HCC Online Student Handbook by visiting this link:

http://www.hccs.edu/media/houston-community-college/distance-education/student-services/HCC-Online-Student-Handbook.pdf

ADMINISTRATION CONTACT INFORMATION

For issues related to your class, please first contact me. 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.

College - Level Math Courses

Chair of Math	Jaime Hernandez	SW Campus	713-718-2477	Stafford, Scarcella, N108
- Secretary	Tiffany Pham	SW Campus	713-718-7770	Stafford, Scarcella, N108
Math Assoc. Chair	Roderick McBane	CE Campus	713-718-6644	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