UMKC Stat 115 Statistical Reasoning
2026-27 Yearlong Course

Instructor Information

High School Instructor: Peter Bonello
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HSCP website: https://www.umkc.edu/hscp/

UMKC Course Details

Stat 115 Statistical Reasoning
Credit Hours: 3
Modality: In-Person
Prerequisite: HSCP requirement of minimum GPA of 3.0 or Composite score of at least 21 on the ACT.

UMKC Course Description

STAT 115 is intended for majors in less quantitative fields. The focus of the course will be on developing critical thinking abilities and decision-making using data in everyday life. Emphasis will be on statistical reasoning underlying the methods of sampling, statistical inference in terms of evaluating the accuracy of an estimate in the context of uncertainty, drawing conclusions from data, and studying relationships in data. Students will be trained to perform hands-on-analysis of real data sets using a computer package. No previous computing experience is required.

UMKC Student Learning Outcomes

Students will be able to:

- Explore real world data using graphical and numerical summaries.
- Critically evaluate a data collection plan to answer a given research question.
- Describe and use probability distributions of discrete and continuous variables.
- Formulate hypotheses based on a research question and implement hypothesis testing using sample data.
- Use simple linear regression to model the relationship between two numerical variables and draw conclusions from data.

UMKC Required and Recommended Materials

Text: Stats Modeling the World, Bock/Bullard/Velleman/DeVeaux, 5th Edition (Pearson)
approved in place of *Informed Decisions Using Data*, 5th Edition, by Michael Sullivan, III (Pearson)

Grading:

A ≥ 93	73 ≤ C < 76
90 ≤ A- < 92	70 ≤ C- < 72
87≤ B+ < 89	67 ≤ D+ < 69
83 ≤ B < 86	63 ≤ D < 66
80≤ B- < 82	60 ≤ D- < 62
77≤ C+< 79	F < 59

Your grade will be determined based on a combination of homework, quizzes, tests, and projects.
Homework and Projects – 25%
Quizzes and Tests – 60%
Midterm and Final Exam – 15%

Attendance: Attendance is crucial to your success in the class. SPX allows 10 absences before missed work will count as a 0. For a planned school absence such as a game or field trip, please let me know at least the day before and we will schedule a makeup test or quiz opportunity. Please turn in completed homework upon returning to school. Follow Google Classroom for the daily assignments and upcoming class schedule.

Testing: A unit test will be given at the conclusion of each unit. Quizzes over chapters may be given out as well.

Final Exam: A comprehensive final will be given for each semester.

Academic Honesty: It is the philosophy of the University of Missouri Kansas City that academic honesty is the only acceptable mode of conduct. Academic dishonesty will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with UMKC regulations and procedures. Discipline may include suspension or expulsion from the course

UMKC Course Policies & Resources
Please refer to the following webpage and the linked resources for critical information regarding course policies and resources. https://www.umkc.edu/provost/policies-and-resources/course-support-and-policies.html

Statement of Equivalency
This dual credit course aligns with UMKC's policies of academic freedom, equivalent student learning outcomes and grading standards. A collaborative partnership between the high school instructor and UMKC faculty coordinator ensures this course aligns with theoretical orientation and educational outcomes equivalent to an on-campus course.

Course Outline and Topics (from Stats Modeling the World, 5th edition)
Unit 1
1. Stats Starts Here
2. Displaying and Describing Categorical Data
3. Displaying and Summarizing Quantitative Data
4. Understanding and Comparing Distributions
5. The Standard Deviation as a Ruler and the Normal Model

Unit 2
6. Scatterplots, Association, and Correlation
7. Linear Regression
8. Regression Wisdom
9. Re-expressing Data

Unit 3
10. Understanding Randomness
11. Sample Surveys
12. Experiments and Observational Studies

Unit 4
13. From Randomness to Probability
14. Probability Rules
15. Random Variables
16. Probability Models

Unit 5
17. Sampling Distribution Models
18. Confidence Intervals for Proportions
19. Testing Hypotheses About Proportions
20. More About Tests and Intervals
21. Comparing Two Proportions

Unit 6
22. Inferences About Means
23. Comparing Means
24. Paired Samples and Blocks

Preliminary Schedule		
	Textbook Chapters	UMKC alignment
Unit 1: Exploring and Understanding Data	1-5	Data Exploration
Unit 2: Exploring Relationships Between Variables	6-9	Regression Modeling
Unit 3: Gathering Data	10-12	Statistical Design
Unit 4: Randomness and Probability	13-16	Probability and Simulation
Finals Week Dec 17-18		
Unit 5: From the Data at Hand to The World at Large	17-21	Statistical Inference
Unit 6: Learning About the World	22-24	
Senior Final (everyone will take) Wednesday April 28 Underclass Final May 18-19 (over additional topics)		

Classroom policies

- **As soon as you enter, place your purse in a crate in the back of the room. On test days, smart watches must be taken off and placed in this area too.**
- Be in your seat and ready to learn when the bell rings. This includes having your materials listed below. If you are late after the bell, please have a pass from where you came or have your demerit card ready. Bathroom usage is not an excuse for being late.
- Engage in solemn behavior during prayer time and pay attention during X-Factor if your hour watches it.
- Be respectful of me, your classmates, and our mission
- Place your water bottles under your seat and out of the aisle
- If there is a bellwork assignment, begin it after prayer

- No phone use, visibility, or audibility in the classroom – keep your phone in your locker or there will be a referral if seen or heard.
- Participate in class depending on the situation: listening, taking notes, working on practice problems, partner or small group discussion are all possible class activities.
- If time to work in class is given to you, do not waste it. If a study hall falls during your period, do not waste it.
- If you need to use the restroom, please ask before you fill out your pass and approach me for signing. If it's possible to wait until a break in the lesson occurs, I may ask you to wait.
- Use passing period time wisely.
- Do not gang rush Mr. Bonello in the first 30 seconds of class with questions.

Homework:

Some kind of homework will be assigned nearly every day. Before a chapter begins, a reading assignment with checkup questions will be assigned to begin discussion for a chapter. The chapter homework will also be assigned at this point, but it may not be possible to work immediately. Homework will be due at the conclusion of a chapter. Homework will be graded beyond just completion, so please make sure it is as correct as possible. Answers are in the back of the book, but they are minimal answers. Your solutions to homework problems should be more detailed than the answers in the back. Collaboration is allowed, we may have time available on block days for homework time and questions. If you must miss a homework turn in day, please bring it the next time you are in class. Solutions will be posted to Google Classroom on turn in days.

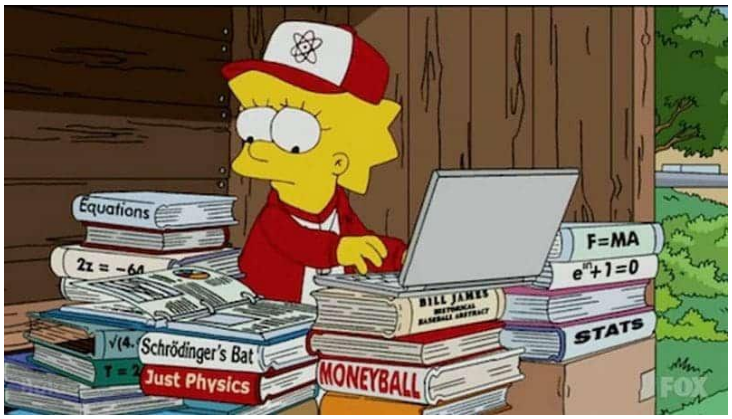
Assessments:

A quiz will follow each chapter, and a major test will follow each unit. The best way to review for any assessment is to review your homework, as similar problems will be on a quiz or test. Please come in outside of class to ask questions before a test.

Necessary Daily Materials

Textbook: Stats Modeling the World, 5th Edition
Calculator: (TI-83/84 Plus is a **must** for this class)
Binder with dividers (you can use construction paper) for notes, handouts, homework
Loose leaf paper (for homework) and pencil
Student Planner (yours, not someone else's)
Occasionally we may use a Chromebook. I have a cart in this room.

Coming to class without your book, binder, calculator, or planner and needing a locker pass will be demerit!



Lisa Simpson the sabermatrician.

St. Pius X High School builds a foundation in faith, academic excellence, and lifelong learning, partnering with families to enhance Catholic morals and authentic truth for the greater glory of God.

“Restore All Things In Christ” - Pope Pius X

Let’s have a great year!

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Student Signature Parent Signature