



## Introduction to Probability and Statistics

MAT 133.I1

Semester: SP21

**Number of Credits:** 4

**Instructor:** Brian Gemalsky

**Days Class Meets:** Tuesdays and Thursdays

**Contact Email:** gemalskrbriand@jccmi.edu

**Meeting Times:** 9:00 am – 11:00 pm

**Online Office Hours:** Tuesday and Thursday  
8:00 -9:00 am or by Appointment

**Class Dates:** 5/11/21-8/9/21

**Location/Venue:** Zoom and JetNet

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### Course Descriptions

This course is an introduction to experimental design, data representation, basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, chi-square analysis, linear regression, correlation and application of the above in making informed, data-driven decisions in real-world contexts. Both graphing calculators and computer-based statistical software (Microsoft® Excel) will be used. If the prerequisite is more than two years old the recommendation is the course placement assessment be taken or the prerequisite be retaken to ensure the success of the student.

### Prerequisite(s)

A 2.0 in MAT 033, 131 or higher, or course placement by exam. (Note: Math 039 is NOT an acceptable prerequisite for Math 133)

### Course Objectives

Students will be able to:

- Perform a hypothesis test involving means and proportions.
- Create, interpret, and apply graphical displays of data (histograms, bar charts, circle graphs, dot plots, and stem and leaf displays)
- Compute, interpret, and apply descriptive numerical measures (mean, mode, median, range, variance, and standard deviation)
- Compute and apply a linear regression line and Pearson product moment correlation coefficient.
- Compute, interpret, and apply probabilities involving discrete, binomial, normal, and  $t$ -distributions.
- Compute and apply confidence intervals for means and proportions.
- Use appropriate technology (such as a graphing calculator) to enhance the understanding of previous objectives.
- Knowledge and awareness of statistics in scientific issues and current events

**Math 133 General Education Outcomes:** The course goals and objectives incorporate specific General Education Outcomes (GEOs) established by the JC Board of Trustees, administration, and faculty. These

goals are in concert with four-year colleges and universities and reflect input from the professional communities we serve. GEOs guarantee students achieve goals necessary for graduation credit, transferability, and professional skills needed in many certification programs. The GEOs and course objective addressed in this class is **GEO 3** – Demonstrate Computational Skills and Mathematical Reasoning.

### Required Materials - Part of Access from Bookstore

- MAT 133 **Coursepack** *Fa20 – Sp21*
- **MyStatLab** (“MSL”) Student Access Code (<http://www.mystatlab.com>) – See Info Sheet on JetNet

### Required Materials – Not part of Access from Bookstore

- Computer with **webcam**, **microphone**, and consistent **internet access** (webcam may be external)
- **Scan-to-PDF Technology**: Free mobile apps or stand-alone scanner for submitting PDF files
- 3-Ring Binder, Pencils, Pens, Highlighters, Erasers, Ruler/Straight Edge
- Access to an Internet-connected computer.

### Optional Materials – Not part of Access from Bookstore

- **Optional Textbook**: *Statistics: Informed Decisions Using Data 6<sup>th</sup> edition*, Author: Michael Sullivan III, Publisher: Pearson, ISBN 13: 978-0-123-578018-3 **Textbook Zero**: This textbook is available for free online within MyStatLab and does not need to be purchased separately.
- Dry Erase Markers, Dry Erase Board

### Follett Access

- Please [review the cost of your required materials](#) to determine the best option for you to purchase your materials.
- For more information on the Follett ACCESS Program, you can view the [view the frequently asked questions](#).

If after reviewing the costs, you choose to opt out, you may do so here: [www.jccmi.edu/optout](http://www.jccmi.edu/optout). Please note your opt out selection is for your entire semester schedule. You cannot opt out and opt in to individual courses. And you must opt out by the due date for your first class.

Class Starts On:	Opt Out Date:
May 10, 2021	May 13, 2021

If you have questions about materials, please contact the Jackson College Follett bookstore at [jackson@bkstr.com](mailto:jackson@bkstr.com). For account billing questions, please contact the Jackson College Cashier at [jccashier@jccmi.edu](mailto:jccashier@jccmi.edu).

## Grading Scale

GPA	GRADE RANGE	GRADE CALCULATION
4.0	90-100%	
3.5	85-89%	MyStatLab = 20%
3.0	80-84%	Classwork = 15%
2.5	75-79%	Projects = 15%
2.0	70-74%	Midterm Exam = 25%
1.5	65-69%	Final Exam = 25%
1.0	60-64%	
0.5	55-59%	
0.0	0-54%	

## Grading Procedure

**Category #1: MyStatLab (MSL) Assignments** These assignments (quizzes, homework, etc.) must be done on a computer with internet access at MyStatLab (reachable through <http://www.mystatlab.com>). Assignments will be given due dates, announced in class. Check MyStatLab and with your instructor for particular due dates.

### Category #2: Classwork

- **In-Class Activities & Assignments:** There will be frequent partner and group-based in-class activities and assignments. These may be scored for credit (participation, correctness or both). These may be individual or group assignments, closed or open notes at the instructor's discretion. Students may be able to choose their own partner/group or may have a partner/group assigned by the instructor.
- **Homework:** There will be frequent assignments to be completed outside of class, including worksheets, watching videos, filling out coursepack notes, etc.

**Category #3: Projects** These activities and worksheets are assigned either from the Student Activity Workbook or in separate sheets posted by the instructor. They may involve groupwork, active participation, working with applets, and working with [StatCrunch](#).

**Categories #4 & #5: Midterm & Final Exams** The Midterm Exam (Ch 1-6) and Final Exam (Ch 1-11) are proctored, closed-book tests that must be taken while being **monitored via a web camera**. In addition, you may be required to screen-share and/or scan your environment during the exam.

- **Note Sheets:** You will be able to use the “Exam Notes Packet” from the coursepack during both Exams. You may also make pages of notes on 8.5 by 11 paper to use on the exams (2 sheets of paper for the midterm, 4 sheets for the final exam – front and back of sheets is fine)
- **Timing:**
  - You will have the opportunity to take each of these exams during a normal class session, or you can make other arrangements directly with your instructor.
  - The Final Exam is during the last week of the course and cannot be taken early so do NOT schedule travel plans during that week or you will receive a ZERO on the final.
  - Exams not taken by the due date will receive a grade of zero except under extreme, well-documented circumstances arranged *in advance* of the due date with the instructor.

### Incomplete Policy

A student may request an incomplete from the instructor, who will follow the JC Incomplete Policy. An incomplete may be granted only if the student can provide documentation that his or her work up to that point is sufficient in quality, but lacking in quantity, due to circumstances beyond the student's control. Furthermore, a written plan for making up the missing work within one semester must be completed by the student. Final determination of whether an incomplete will be given is the instructor's decision. Note: An “Incomplete” grade is not a way to avoid a failing one.

### Attendance Policy

Just as in a traditional classroom course, regular class participation and keeping up with assignments is **required**. It is my experience that students that regularly attend and participate in synchronous class sessions are significantly more successful in the course. Therefore, students are expected to attend and participate fully in all class meetings, arriving on time and staying until the end.

**Participation** in the course will require:

1. Regularly showing your face via webcam
2. Talking and working with others (including your instructor) through an online platform (such as Zoom or BigBlueButton) in both whole class sessions and “breakout” rooms.
3. Contributing to class and group discussions
4. Sharing your screen and/or work with your groupmates and/or the class.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be taking and submitting attendance every day of class to assure compliance with college policy and federal regulations. **Missing class may result in you being withdrawn from the course.** Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student, you are responsible for how your class attendance and participation may impact your academic progress; the accountability lies with you.

### Absence Policy

If absence is unavoidable the student is responsible for doing the following:

1. Contact your instructor regarding your absence as soon as possible to find out what you missed and what you need to do before the next class. (Having a peer contact in the class is very helpful for finding out this information as well!)
2. Watch the recording of class – if available.
3. Turn in all assignments that were given in class as well as those that were due as “homework” on time.

Please remember that office hours are not a replacement for class time.

### **Academic Honesty Policy**

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

**Plagiarism is defined as the failure to give credit for the use of material from outside sources.**

**Plagiarism includes but is not limited to:**

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

**Cheating is defined as obtaining answers/material from an outside source without authorization.**

**Cheating includes, but is not limited to:**

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

### **Extra Credit Policy**

There will be no opportunities for extra credit. Your grade calculation is based solely on your performance on course assignments listed above.

### **Classroom Behavior Policy**

***We know what a person thinks not when he tells us what he thinks, but by his actions.*** - Issac B. Singer

**We are each responsible for our work, our learning, and the consistency of our performances.**

The regular in-class collaborations, online homework, and examinations will require consistent effort on your part. Generally speaking, mathematics is much like a foreign language – it requires regular effort and consistent practice to understand and master.

**We are each respectful of everyone in the class (including ourselves).**

Please silence mobile phones and other electronic devices, refrain from using any tobacco products, and come prepared (and on time) to work together and ask/answer questions.

**We will communicate with each other promptly regarding problems or concerns.**

Regular, direct communication solves many more problems than it causes. Please do not hesitate to contact me for any reason, and I will do the same with you.

**Caveat**

Students are advised that some revisions to this syllabus may be necessary during the course due to school closing policies, instructor illness and other procedural improbabilities.

**Accessibility**

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991 and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at [JCCSS@jccmi.edu](mailto:JCCSS@jccmi.edu) or visit the [Center for Student Success web page](#).

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

**Where to Get Help**

Your fellow students and I are your best, most immediate resources for learning. Even so, there are many other sources to consider and investigate. Be creative, be resourceful, and share what you find -- we're all in this together! I strongly suggest you start up a regular study group as soon as you are able with some of your classmates. For more information on starting and maintaining a study group, check out the following link: <http://bit.ly/math-study-group>

Other sources of help:

- **Office Hours:** Meet with me during office hours.
- **Jackson College’s Center for Student Success (CSS):** Free online tutoring in is available at <http://www.jccmi.edu/Success/Tutor/>.
- **Supplemental Instruction:** Some sections of the course have Supplemental Instruction (SI) Leaders assigned to them. These students will serve as peer “math coaches” for the students in that section, and will facilitate weekly study sessions. These study sessions are open to *all* MAT 133 students and are completely voluntary, but highly recommended. **In a recent semester, students that utilized SI study sessions experienced an increase of over 17% in their pass rates, compared to those who did not.** Even if your section does not have an SI Leader, you are encouraged to attend SI Sessions for your course. For times and locations of SI sessions, go to <https://www.jccmi.edu/supplemental-instruction/>
- **YouTube Videos:** Lead Faculty Alana Tuckey has created hundreds of videos showing for this course including lectures, calculator tutorials, and more. Go to: <http://www.youtube.com/user/tuckeyalanaj> and check out any 133 playlists.
- **MyStatLab:** There are videos, extra problems, sample exams, lecture notes, PowerPoint lectures and more available in MyStatLab. It’s a great resource! In particular, the **Study Plan** in MyStatLab can help with studying for exams as it gives you unlimited extra problems to do for practice.

### Important Dates:

DATE	EVENT
MAY 10, 2021	START OF SEMESTER
AUGUST 9, 2021	END OF SEMESTER

## Calendar

*\*Calendar dates are an approximation and are subject to change.*

<b>Math 133 – Tentative 12-Week Schedule</b>			
<b>Day</b>	<b>Date</b>	<b>Material Covered</b>	<b>Topics</b>
1		1.1	Introduction to Statistics; Start
2		3.1, 3.2	Simple Random Sampling; Measures of Spread
3		3.3	Weighted Mean;
4		3.4, 3.5	Measures of Position; Boxplots
5		4.1, Start 4.2	Correlation; Regression
6		Finish 4.2, 4.3	Residual Plots
7		5.1	Basics of Probability
8		5.2	Additions Rule
9		5.3	Multiplication Rule
10		6.1, 6.2	Binomial Distributions
11		Midterm Review	Review Chapter 1-6
12		Midterm Exam	LIVE ZOOM PROCTORED EXAM
13		7.1, 7.2, 7.3	Normal Distributions
14		8.1, 8.2	Distribution of Sample Means
15		9.1	Confidence Intervals for Means
16		9.2	More with Confidence Intervals
17		9.4, 9.5	More with Confidence Intervals; Confidence Interval Review
18		10.1	Beginnings of Hypotheses Testing
19		10.2	Hypothesis Testing One Proportion
20		10.3, 10.5	Hypothesis testing with Means, Review of Hypothesis Tests
21		1.6, 11.1, Start 11.2	Hypothesis testing for Difference of Proportions and Means
22		Finish 11.2, 11.3	Hypothesis testing for Difference of Means
23		11.5, Review for Final Exam	Review
24		Final Exam	LIVE ZOOM PROCTORED EXAM