MAT 033.71 – Algebra for Statistics
Course Syllabus (Fall 2015)

Instructor: Terry L. Cox

Office: N/A Schedule appointments whenever needed

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MyMathLab: http://mymathlab.com (Course ID: **cox78933**)

Class Time & Location: MON/WED 12:30-3:00 JC-LISD

Required Materials:

MAT 033 Course Pack *Fall 2015 - Spring 2016* (*only available at the JC Bookstore*) & 3-hole binder

MyMathLab ("MML") Student Access Code (*available online and at the JC Bookstore*)

TI-84 Calculator (Note: TI-83s cannot run the newest operating system, which puts students using them at a *significant* disadvantage in 033 and 133, so all notes and instructions presume a TI-84.)

Please note:

- ✓ Access to an Internet-connected computer and Microsoft Excel is required for Math 033. Multiple Excel-based projects will be assigned and regular class homework must be completed on a computer with Internet access—whether on campus, at home, or elsewhere.
- ✓ There is no, single "text" for this course, aside from the course pack. The probability and statistics portions of the course are based on Sullivan's 4th Edition of *Statistics: Informed Decisions Using Data*. Purchasing this text is unnecessary, as your MML access provides electronic access to the entire text.
- ✓ The MyStatLab Student Access Code that you purchase for this course *can also be used* for the MAT 133 course (the required follow-up to MAT 033)!
- ✓ Be sure to buy a "**MyStatLab**" Student Access Code, *if you purchase through the bookstore*!

Strongly Suggested Materials: multi-colored highlighters, pencils, eraser, ruler, sticky notes

Course Description: As an alternative pathway to college-level mathematics, this course introduces fundamental algebraic concepts within an underlying framework of statistics and mathematical modeling based on real-world data. The major concepts and themes include in this course are: problem solving and experimental design; unit analysis and error in measurement; dimensional analysis and scientific notation; representing data and coordinate graphing; introduction to basic descriptive statistics and probability theorems; basic geometric principles (area, volume, perimeter); arithmetic operations on numbers, ratios, summations, and percentages; solution of formulas; modeling relationships (linear regression); solving equations and inequalities; and function arithmetic and graphing. Appropriate technology includes a graphing calculator.

Prerequisite: A 2.0 in MAT 020 within 2 years, or course placement by exam.

Course Objectives and Outcomes:

Math 033 Core Course Objectives: Students successfully completing Math 033 will be able to:

1. Create, interpret, and apply graphical displays of data (histograms, bar charts, circle graphs, dot plots, and stem and leaf displays).
2. Compute, interpret, and apply descriptive numerical measures (mean, mode, median, range, variance, and standard deviation).
3. Use algebraic processes to manipulate formulas, simplify basic algebraic expressions and solve linear equations and inequalities.
4. Demonstrate understanding of functions, independent and dependent variables, number theory, sets, and mathematical notation.
5. Demonstrate understanding of concepts of equations by finding and interpreting appropriate graphs, *x*- and *y*-intercepts, and specific function characteristics.
6. Generate and interpret regression models to fit data.
7. Make, interpret, and compute with measurements in scientific notation.
8. Use appropriate technology (such as a graphing calculator) to enhance the understanding of previous objectives.
9. Demonstrate knowledge and awareness of statistics in scientific argumentation and current events.

***Math 033 Associate Degree Outcomes*:** All courses at Jackson College address one or more of the institutionally defined Associate Degree Outcomes (ADOs). MAT 033 contributes to the following outcomes.

ADO 3: Demonstrate computational skills and mathematical reasoning

Demonstrates computational skills using positive and negative numbers, fractions, and decimals, ratio and percents.
Demonstrates "numerical literacy," involving:
1) an ability to use multiple representations of numbers interchangeably,
2) recognition of the relative magnitudes of numbers,
3) knowledge of the relative effect of operating on numbers in particular contexts, and
4) the development of referents for measures of common objects and situations.
Uses and understands basic mathematical and statistical terminology – e.g., term, equation, exponent, mean, median, standard deviation.
Demonstrate an understanding of statistical displays (histograms, bar charts, pie charts, boxplots, stem-and-leaf plots)
Expresses work in an organized manner in order to reach a well-supported and justified conclusion that is reasonable within the context of a situation.
Uses mathematical methods and concepts in a variety of situations to model and solve problems.
Acquires and applies a broad range of skills, concepts, and technologies to facilitate efforts to visualize, interpret, and solve statistical problems.
Uses graphic calculator and/or computer statistical systems to support mathematical reasoning and problem solving
Understands that the role of statistics and mathematical modeling in interpreting the material world – bias, misleading graphs, comparisons of statistics and parameters, and using models to interpolate/extrapolate.

ADO 7: Demonstrate Problem Solving

Distinguishes between fact, opinion, inference, and prediction
Questions the source of evidence to articulate potential sources of bias and error.
Demonstrates an understanding of the nature of bias in evidence supporting arguments.
Recognizes how context impacts conclusions.
Understands how conclusions change with changes in knowledge and contextual factors.
Incorporates new knowledge with old, to form new ideas.
Articulates conclusions about data based on statistics and representations.
Uses expanded vocabulary to articulate solutions and conclusions to new problems in new contexts.

Course Requirements:

Online Homework:

- These assignments must be done outside of class time on a computer with Internet access at **MyMathLab** (reachable through http://www.mymathlab.com).
- Homework due dates are listed on the MyMathLab course and announced in class.

In-Class Work, Quizzes, etc.: There may be in-class work submitted in class (turned in for credit). These may be individual or group assignments, closed or open notes at the instructor's discretion. There may also be additional quizzes posted on MyMathLab for students to take outside of class.

Projects: There will be three *required* projects for this course that expand on concepts covered and require students to use real-world data and tools (Microsoft Excel computer software). One will involve unit analysis and real-world applications. Another will involve collecting and analyzing quantitative data, while the last will involve collecting and analyzing qualitative data. These projects are required of all students taking the course.

Exams: Each of the three exams may have cumulative review questions. The final exam is cumulative for the entire course. Students may create a 1-page (both sides) note sheet for use on each exam, and all previous exam note sheets may be used on the final exam. Exams **may not be made up** except under previously arranged, well-documented, unavoidable circumstances (ultimate determination made by the instructor). Any such make-up exams must be completed before the next class period or a zero will be given for that exam.

NOTE: The final exam takes place during the *last week* of the course and CANNOT be taken early.

Important Dates: Be sure to visit the JC Academic Calendar to note Holidays or other special days with no classes at http://www.jccmi.edu/academics/academic_calendar.htm. Also note drop and withdrawal dates: http://www.jccmi.edu/studentservices/registration/canceled_drops_withdraws.htm

Course Policies:

Absence Policy: Students are expected to attend all class meetings, arriving on time, and staying until the end. A variety of in-class activities involve other students and group participation, as well as handouts. If absence is unavoidable, the student is responsible for obtaining any missed lecture notes and assignments from another student. Please remember that office hours are not a replacement for class time.

Grading Information: A 2.0 or "C" is a passing grade. Only courses with passing grades count toward graduation. Other colleges transfer in only courses with passing grades. Many financial aid sources, including most employers, require passing grades. Additionally, earning less than a 2.0 in this class will result in you being unable to participate in the next course in the sequence (MAT 133). This will prevent access to any further programs of study and completion of any associate's degree.

Grading Scale:

90 – 100%	4.0
85 – 89%	3.5
80 – 84%	3.0
75 – 79%	2.5
70 – 74%	2.0
65 – 69%	1.5
60 – 64%	1.0
55 – 59%	0.5
0 – 55%	0.0

Grading Weights:

MML Work: 13%
In-Class Work/Attendance: 10%
Exam 1 (*Unit 1*): 14%
Exam 2 (*Units 2-3*): 14%
Exam 3 (*Units 4-5*): 14%
All Three Projects: 15%
Cumulative Final Exam (*Units 1-7*): 20%

Intermediate Grading: To comply with college policy and federal regulations you will receive three intermediate grades during the semester. The grades assigned are letters with the following meanings:

- **V: Verifies** that you are participating and your work so far has been acceptable
- **H:** You may require **Help** in order to complete the class successfully. If you receive an H grade, you will be contacted by the Center for Student Success (located in Potter Center, Federer Room C) and offered tutoring services.
- **Q:** Means that you **Quit** participating in the course. If you receive a Q grade, you will automatically be withdrawn from the course. A Q grade is normally assigned if you have not submitted work (classwork, exams, participation, etc.) for two weeks and have not contacted your instructor regarding your absences.

Extra Credit: Math Department policy is that no "extra credit" be part of any MAT course at JC. There will be no opportunities for any *extra* credit beyond the scope of the above requirements.

Incomplete Policy: (*Excerpt from JC Policy*) "Students may receive an "I" if, at least 90 percent (or as otherwise designated within the course syllabus), of the coursework is completed with an average grade of 2.0 to meet the objectives as specified in the course syllabus. … The grade of "I" is not awarded to students who did not attend, or seldom attended, or to those who simply are not pleased with their final grades." http://www.jccmi.edu/policies/Academics/Policies/1003.pdf

Academic Honesty Policy: **You are *encouraged* to talk to each other, but all your submitted work must demonstrate your own understanding.** In other words, "group-work" is a great way to learn material, but anything you submit for a grade must be done by you – reflecting your own thought processes, not those of anyone else. If I suspect you of academic dishonesty, I will follow JC's Academic Honesty Policy and take appropriate action up to and including assigning a **failing grade** for the assignment, quiz, project, report, exam, or the course itself (whichever I deem necessary). The policy can be seen here: http://www.jccmi.edu/policies/Academics/Policies/1004.pdf

Classroom Behavior Policy: *The following are expectations that we can all share.*

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.

Getting Help

Office Hours: Meet before or after class. Otherwise, make an appointment.

Center for Student Success: The Center for Student Success has tutoring available for free to students enrolled in Math 033. You can get help with take-home work, MyMathLab homework, and more. The Center is located in Potter Center, Federer Room C (on Central Campus), or through the front desk at the other center locations. *BE AWARE that not all tutors have experience with statistics!*

Supplemental Instruction: Our section of the course has a Supplemental Instruction (SI) Leader assigned. His name is Bryan Hixson. He will serve as a peer "math coach" for the students in our section, and will facilitate weekly study sessions. These study sessions are open to *all* MAT 033 students and are completely voluntary. For times and locations of SI sessions, visit the Center for Student Success webpage and click on "Supplemental Instruction" in the menu (http://www.jccmi.edu/Success).

You Tube Videos: A number of videos showing how to use the TI-84 calculator (and other things) are posted to YouTube: http://www.youtube.com/user/jccmat033. Feel free to request others, if topics are of interest to you. Of course, there are MANY online resources out there – the trick is finding some that are *helpful* and of *high quality*.

MyMathLab: There are videos, extra problems, sample exams, lectures, PowerPoint slides and more available in MyMathLab. It's a great resource, but only useful if you explore and try it out!

Each Other: Your fellow classmates are perhaps the single best resource you have. Get to know each other, write down names and numbers for your peers, and rely on each other! **Starting a study group** is probably the ***best way*** to maintain your studies and improve your learning. For more information on starting a study group for math, visit: http://bit.ly/math-study-group