

MONTGOMERY COLLEGE

Department of Mathematics & Statistics

**Math 132 – Elements of Mathematics III: Statistics & Problem Solving**

**Spring 2019 - CRN XXXXX – C. Cornell**

**Class Meetings**

Room HT XXX, Germantown Campus

**Instructor**

Professor Carol Cornell

Office: HT 416

Mailbox: HT 314

Text: *GroupMe* Class Account

Office Hours:

Email: [Carol.Cornell@montgomerycollege.edu](mailto:Carol.Cornell@montgomerycollege.edu)

Classmate's Name	Phone Number	E-mail Address

**Administrative Deadlines**

***Tuesday, January 29th***: Last date to drop the course and receive a refund.

***Tuesday, February 12th***: Last date to drop the course without a grade being recorded or to change to audit or credit.

***Tuesday, April 16th***: Last day to drop the course with a "W". To withdraw from a class, you must go to the Registrar's Office and complete the necessary withdrawal forms. If you quit attending class and do not withdraw from the class, your grade in the course may revert to an "F".

**Catalog Description**

4 credits

This course covers descriptive statistics, sampling, standardized tests, basic probability, counting techniques, expectations, and problem solving in a variety of settings. Intended for elementary education majors, this course is also suitable for parents of school-age children.

**Prerequisites:** *A grade of C or better in MATH 131 or consent of department.*

### **Course Philosophy**

This is a course in mathematical content, not in teaching methods. That said, I will try to model some techniques and principles that will hopefully prove helpful to you as you work and play with children who are learning mathematics. Some general guiding principles of the course will be:

- Mathematics is about “sense-making,” not memorization. Therefore, you should not consider your professor or a textbook to be the source of mathematical authority. Rather, a compelling, logical argument should be what convinces you that something is right.
- No one (logically sound) way to solve a problem is any more correct than another. Therefore, be open to new ways of thinking about old problems, and don’t give up on a method that seems to work for you unless you find out otherwise.
- The best teachers understand how people learn new things. Therefore, pay close attention to how *you* conceptualize a problem, gather evidence, and build strategies to solve it. This mirror on yourself is your best example as you develop an understanding of how people learn mathematics.

### **Course Outcomes**

Upon course completion, a student will be able to:

- Construct and interpret displays of data.
- Analyze misleading statistics.
- Compute, interpret, and apply measures of center and spread.

- Choose among representations and summary statistics to communicate information. Evaluate methods of collecting data for possible bias.
- Compute and interpret experimental and theoretical probabilities using sample spaces, tables, tree diagrams, and simulations.
- Solve problems that involve the Fundamental Counting Principle, permutations, or combinations.
- Solve problems about independent or dependent events.
- Find and interpret expected values in insurance plans and games.
- Use strategies to solve problems.
- Compare different methods for solving a problem.
- Apply knowledge from number systems, sets, geometry, algebra, statistics, and probability to solve problems.

### **COURSE MATERIALS:**

- **Required: *Mathematics for Elementary Teachers with Activities***, Loose-Leaf Version, plus *MyLab Math* -- Access Card Package, 5/e, Beckmann ISBN: 0134800192 Our class MLM code is  
*\*Note: if you have previously purchased the book and access code for Math 130 or Math 131, you do not need to purchase the code again.*
- **Required: *Crossing the River with Dogs, Problem Solving for College Students***, Second Edition, by Ken Johnson et al., Wiley, 2012. ISBN: 978047046473.
- **Required - Computer & Internet Access:** In addition to using the internet for online homework via *MyMathLab*, students need daily access to the course Blackboard page to submit assignments and obtain access to lecture notes, email, class announcements, etc.
- **Recommended:**
  - **Calculator:** A scientific, or TI-84 (preferred) calculator may be used in the class. Models TI-89 and TI-92 are not permitted. *If you do not have a graphing calculator, you may borrow one for the semester from the MAPEL Center on the Germantown campus. (Form provided on Blackboard)*

- **Colored Pencils/Pens:** Colored pencils/pens may help students with problem solutions.
- **Ruler/Straight Edge:** Any simple straight edge may be used to help with some problems
- **Notebook:** A three ring notebook is recommended for handouts and worksheets.

### **Student Email and Blackboard Use**

The main way I will communicate with you is through *MC Email*. You are expected to check your *MC email* at least daily. When you wish to contact me, I prefer that you email me from your *MC email* account whenever possible. Be sure to write your email messages in a style appropriate for professional communication; email between you and your professor is subject to a different set of norms than text messages between friends! Always identify yourself, reference this course, and if you ask a question or make a request, be sure to check for a response in a timely manner.

Similarly, I will communicate with you through the course *Blackboard site*. You are expected to login to the course Blackboard site at least daily to see if there are any new postings or updates. Users of mobile devices can download the free *Blackboard Learn* mobile app and use it to access our course Blackboard resources.

### **Assessment**

**Homework:** Daily practice problems are found in the text as well as in *MyMathLab*. Complete these assignments by the due dates specified in class. No extensions will be made. Online homework will be assigned for each section of the textbook and will be due before each exam. You should make every effort to complete these assignments before we cover each section in class. It will not be possible to complete all of these assignments the night before the exam. Any written homework is due at the beginning of class.

**Reflection Assignments:** You will frequently be required to submit an online reflection. You will consider and respond to a prompt I provide. The reflection responses will be graded for completeness and clarity of thoughts. You must submit them to *Blackboard* by

the posted due date. Each entry will be assessed as follows: 2 points for a well-done entry, 1 point for an incomplete or off-topic entry and 0 points for a missed entry. (I will read your entries, but they will not be available to classmates, and I will not share them with others.)

**Classwork/Written Work:** You will be given group activities and individual activities throughout the semester. Some of these activities will be collected and graded on both *completeness* and *accuracy*. *No late work will be accepted. (See Late Assignment Policy below.)* If a student is not present to complete and submit an in-class assignment, the student cannot make up that assignment. While I highly encourage you to work together, if two identical papers are turned in, both parties will receive a 0. Also, when given the opportunity to work together, it is expected that ALL members of the group will participate and contribute. If non-contributing members are simply copying the work of others in the group, all parties will receive a 0. I will drop the lowest grade from this category at the end of the semester.

**Participation and Presentations:** Participating in class is very important to gain the most from the course. You are expected to attend all classes and participate in group worksheets, activities, class discussions, and make presentations. If you are absent on the day your name is randomly called for a presentation, your name will go back into the queue to be called again. Each day I will record a participation grade. If you are late and/or don't contribute to the group, you will not receive credit for the day.

**Quizzes:** You will have quizzes throughout the semester. At the end of the semester, I will drop your lowest quiz grade. [I do not give makeups for quizzes.](#) If you miss one quiz, it will be dropped as your lowest quiz grade.

**Exams:** You will have 3 in-class exams and a 2-hour, cumulative final exam. Attendance during all exams is mandatory. Your final exam will be held [Monday, May 13<sup>th</sup>, 12:30 – 2:30pm](#) in our usual classroom, HT204.

**Late Assignment Policy**

**No late homework or classwork will be accepted.** If you cannot attend class to turn it in, you can submit work early or on time by submitting it to my mailbox in HT314, sending it with a classmate, or scanning it (or taking a picture with your phone) and emailing it to me. If you submit work by scanning and emailing it to me, do not consider it accepted until you get a confirmation email from me; if you don't get a confirmation, I probably did not receive your work in time. If a student is not present to complete and submit an in-class assignment, the student cannot make up that assignment.

**Extra Help**

There are many resources that will help you to be successful in this course. You will need to attend class and pay attention, work hard, and do practice and homework problems on your own. If you find that you are still struggling, you should try some of the following:

- Talk to me after class or make an appointment to talk with me.
- Send me an email. (Some questions are just too hard to type in e-mail, but I will answer those that I can.)
- Meet with classmates outside of class for study groups (VERY VALUABLE RESOURCE!)
- Get help from friends and colleagues
- Visit the **MAPEL Center**, HT 229, for free tutoring.

<https://cms.montgomerycollege.edu/edu/departments.aspx?id=18038>

**Additional Resources:**

- **Online Educational Resources (OERs):** In past semesters with MATH 132, our faculty members have learned that there are five areas in which students often need extra support. Resources for these five areas in particular are located online at <https://libguides.montgomerycollege.edu/math132>
- **Fuel for Success – Nourishing the Mind, Body and Spirit:** Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, is urged to contact the Dean of Students Affairs on your campus. Furthermore, please notify the professor if you are comfortable in doing

so. This will enable the professor to provide any resources that they may possess. We know this can affect performance in the course and Montgomery College is committed to your success. The Deans of Student Affairs are: Dr. Jamin Bartolomeo (GT), Dr. Tanya R. Mason (RV), and Dr. Clemmie Solomon (TPSS). <http://cms.montgomerycollege.edu/student-health-and-wellness/fuel-for-success/>

**Final Exam**

Your final exam will be held **Monday, May 13<sup>th</sup>, 12:30 – 2:30 pm** in our usual classroom, HT204.

**Make-up Policy**

All quizzes and tests must be taken at the appropriate time. **There will be no makeup tests or quizzes.** A student who misses a quiz or test, for whatever reason, will receive a zero on that assignment. At the end of the semester, the lowest quiz grade will be dropped. If the grade on your final exam is better than your worst test grade, the final exam grade will replace that lowest test grade; this will allow you the flexibility to miss a class if you are ill, if you have responsibility for someone who is ill, or if you have another commitment you must maintain. If you miss class, you should bring me written documentation with the reason.

**Letter Grade Assignments:**

Grades will be given using the scale: At least 90% A, at least 80% but below 90% B, at least 70% but below 80% C, at least 60% but below 70% D, below 60% F.

In order to protect your privacy, grades will not be given out via email or phone. Final course grades will be posted on *MyMC. Blackboard* and *MML* gradebooks can be misleading; do not confuse *Blackboard's* gradebook with my assessment of your current grade in the class! If you wish to know where you stand grade-wise, please ask.

**Final Course Grade**

The final grade for this course will be calculated as follows:

Tests and Quizzes	35%
Final Exam	25%
Classwork & Written Reflections	15%
Homework	15%
<u>Presentations</u>	<u>10%</u>
Total	100%

**Classroom Conduct:**

Students are expected to adhere to the [Student Code of Conduct](#). As a community of people with common learning goals, we will benefit from an atmosphere of collegiality and mutual respect. You are expected to act in a way that promotes this atmosphere. This includes:

- Contributing meaningfully to discussions and listening thoughtfully to others' contributions.
- Avoiding disruptive, distracting or disrespectful behaviors such as eating, using phones, wearing headphones, etc. *Please turn off phones and other devices* that make noise or might distract you, your colleagues, or your professor.
- Texting during class is rude. Silence your phone and put it away during class sessions.
- Do not use classroom computers for any purpose that is not directly related to our class activity.

**Academic Honesty**

All students are expected to achieve their goals with academic honor. Cheating, plagiarism, and/or other forms of academic dishonesty or misconduct, examples of which can be found in [The Student Code of Conduct](#), will not be tolerated. Any student found to be cheating on any graded work for this class will receive no credit for the assignment, and, at my discretion, a failing course grade. Students are strongly encouraged to work



and study together, but any work submitted for a grade should be the student's own work in the student's own words, and should not be identical to another student's work. I reserve the right to ask for explanation of any submitted work, and may take the quality of the explanation into account when assigning a grade.

### **Attendance**

You are expected to attend and participate in all class meetings. Asking questions, contributing to discussions, and respectfully listening to classmates are examples of ways to contribute positively. Absence, being inattentive, and dominating the conversation are not. If you do have to miss a class meeting, you are still responsible for all assignments, announcements and content discussed in your absence, so please make arrangements for someone to forward detailed information to you. However, getting notes will not adequately substitute for your presence in class. *Any work due in class must be submitted, whether you are present or not, so make appropriate arrangements.* If you submit work by scanning and emailing it to me, do not consider it accepted until you get a confirmation email from me; if you don't get a confirmation, I probably did not receive your work in time. If you are late to class, please come in and try not to be disruptive; however, I will not be able to accommodate you with extra time to complete in-class work.

### **Communication**

I will post all class announcements on the announcement page of *Blackboard*. Make sure you log in daily to check this information. I will use your Montgomery College email address as my way of contacting you directly. If you use something other than your Montgomery College email, make sure to check your college email often as the college sends information using that account.

### **Accommodations**

Any student who needs an accommodation due to a disability should make an appointment to see me during my office hours. In order to receive accommodations, a

letter from *Disability Support Services*, (GT-SA 250; R- MK 210; or TP/SS-ST 233)

<https://www.montgomerycollege.edu/counseling-and-advising/disability-support-services.html>, will be needed. Any student who may need assistance in the event of an

emergency evacuation must identify to the Disability Support Services Office. Guidelines for emergency evacuations for individuals with disabilities are found

at: <http://www.montgomerycollege.edu/dss>.

### **Cancellation of Class**

If class is cancelled due to weather or any other reason, please read through the section that would have been covered and work on the homework problems. This will enable us to catch up by covering that material more efficiently during the next class. Any quiz or test scheduled for a day when class is cancelled will be given during the next class meeting, and *MyMathLab* homework due during a closing will still be due unless I notify you otherwise. I will keep the class informed by means of MC email and/or *Blackboard* announcements, assuming these technologies are functioning and available.

If our campus closes for a period of time that interferes with our scheduled class meeting, leaving less than 50 minutes of class time, our class will be cancelled for that day. If the closure leaves us with 50 minutes or more of class time, then class will meet for the remaining portion of its regularly scheduled period. [Montgomery College does not follow Montgomery County Public Schools when it comes to closings. Please check the MC website or listen to TV or radio for College closings.](#)

For the most up-to-date information regarding College openings, closings, or emergencies, all students, faculty, and staff are encouraged to sign up for email and text alerts via MC Alert. Registration information is available at <https://cms.montgomerycollege.edu/mcalerts/> .

### **Important Student Information Link**

In addition to course requirements and objectives that are in this syllabus, Montgomery College has information on its web site (see link below) to assist you in having a

successful experience both inside and outside of the classroom. It is important that you read and understand this information. The link below provides information and other resources to areas that pertain to the following: student behavior (student code of conduct), student e-mail, the tobacco free policy, withdraw and refund dates, disability support services, veteran services, how to access information on delayed openings and closings, how to register for the Montgomery College alert System, and finally, how closings and delays can impact your classes. If you have any questions please bring them to your professor. As rules and regulations change they will be updated and you will be able to access them through the link. If any student would like a written copy of these policies and procedures, the professor would be happy to provide them. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies.

***\*\*\*This syllabus is tentative. I reserve the right to make announced changes to the content herein as the semester continues. Any changes will be published on our Blackboard site and announced in class.***

Details/updates about quizzes, tests, reflections, class notes and homework assignments all posted on Blackboard.

DATE	DAY	TOPICS	QUIZZES, TESTS, REFLECTIONS
01.21.19	Mon.	Martin Luther King Holiday – No Class	
01.23.19	Wed.	Introductions; Formulating Statistical Questions, Gathering Data, and Using Samples	
01.28.19	Mon.	Displaying Data and Interpreting Data Displays	<b>REFL. #1</b>
01.30.19	Wed.	Misleading Graphs; The Center of Data: Mean, Median and Mode	
02.04.19	Mon.	Summarizing, Describing, and Comparing Data Distributions	<b>QUIZ # 1</b>
02.06.19	Wed.	Measuring Spread - Mean Absolute Deviation	
02.11.19	Mon.	Measuring Spread - Standard Deviation	<b>REFL. #2</b>
02.13.19	Wed.	Measuring Spread - Normal Distributions	<b>QUIZ #2</b>
02.18.19	Mon.	Test Review	
02.20.19	Wed.	<b>TEST #1 (BECKMAN 15.1 – 15.4, SONNABEND 12.5)</b>	<b>TEST #1</b>
02.25.19	Mon.	Basic Principles of Probability	
02.27.19	Wed.	Probability Rules and Simulations	
03.04.19	Mon.	Counting the Number of Outcomes	<b>REFL. #3</b>
03.06.19	Wed.	Calculating Probabilities of Compound Events, Expected Value	<b>QUIZ #3</b>
03.11.19	Mon.	Spring Break – No Class	
03.13.19	Wed.	Spring Break – No Class	
03.18.19	Mon.	Expected Value, Conditional Probability	<b>REFL #4</b>
03.20.19	Wed.	Conditional Probability, Permutations and Combinations	
03.25.19	Mon.	Permutations and Combinations	<b>QUIZ #4</b>
03.27.19	Wed.	Test review	
04.01.19	Mon.	<b>TEST #2 (BECKMAN 16.1 – 16.4, SONNABEND 13.2-13.3)</b>	<b>TEST #2</b>
04.03.19	Wed.	Crossing the River with Dogs 1: Draw a Diagram	
04.08.19	Mon.	Crossing the River with Dogs 3: Eliminate Possibilities	<b>REFL #5</b>
04.10.19	Wed.	Crossing the River with Dogs 6: Guess and Check	
04.15.19	Mon.	Crossing the River with Dogs 6: Guess and Check	<b>QUIZ #5</b>
04.17.19	Wed.	Crossing the River with Dogs 7: Identify Sub problems	
04.22.19	Mon.	Crossing the River with Dogs 8: Analyze the Units	<b>REFL #6</b>
04.24.19	Wed.	Crossing the River with Dogs 12: Venn Diagrams	<b>QUIZ #6</b>

04.29.19	Mon.	Venn Diagrams, Test Review	
05.01.19	Wed.	<b>TEST #3 (CROSSING RIVER WITH DOGS, CHAPTERS 1,3, 6 7, 8 and 12)</b>	<b>TEST #3,</b>
05.04.19	Sat.	Raptor Cram Jam Final Exam Review, OPTIONAL!	
05.06.19	Mon.	FINAL EXAM REVIEW	<b>REFL #7</b>
05.13.19	Mon.	<b>FINAL EXAM 12:30 – 2:30p.m. HT 204</b>	

***This is a TENTATIVE schedule. It can, and will change. Changes will be announced in class and on the class Blackboard page.***