#### MONTGOMERY COLLEGE Mathematics & Statistics Division Germantown Campus Spring 2019 MATH150 Elementary Applied Calculus I

Instructor Information

#### **General Course Information**

Name: Professor Gail A. Z. South
Telephone Numbers: 240/567-1931 (office); 240/567-7722 (Division)
E-Mail Address: Please do NOT send me
Blackboard messages. I will NOT get them in a

timely manner.

<u>Gail.South@montgomerycollege.edu</u> Office Location: 223 HTSC Office Hours:

11000.51					
	Monday	Tuesday	Wednesday	Thursday	

Credit Hours: 4 Course CRN: Meeting: Location:

MxL Course Code:

<u>MW</u>: TR:

#### **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 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/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 MC alert system, and finally how closings and delays can impact your classes, If you have any questions, please bring them to me. As rules and regulations change, they will be updated and you will be able to access them through the link below. If any student would like a written copy of these policies and procedures, I will be happy tp provide such. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies.

# http://cms.montgomerycollege.edu/mcsyllabus

## **Course Specifics**

This is a general calculus course primarily for business students. Topics include algebraic, exponential, and logarithmic functions and their graphs, an intuitive approach to limits, differentiation, integration, and functions of several variables. Major emphasis is on applications in business, economics, and the life sciences. The course is not open for credit to students who have a grade of C or better in MATH181 or equivalent.

**Prerequisite:** A grade of C or better in MATH096, appropriate score on mathematics placement test, or consent of department. Assessment levels: ENGL 101/ENGL 101A, READ 120.

TODIC	OBJECTIVE		
TOPIC	Upon completion of this course, a student will be able:		
	1. Read and use function notation.		
	2. Identify the domain and range of a function.		
	3. Recognize whether a graph represents a function.		
	4. Write linear functions modeling various applications.		
	5. Graph linear and quadratic functions.		
A Derview of Europeiana and	6. Graph polynomial functions of form $f(x) = x^n$ for $n = 3, 4, 5$ .		
A Review of Functions and	7. Recognize all asymptotes for a rational function: sketch its graph.		
<u>Graphs</u>	8. Find the sum, difference, product, quotient, and composition of two functions.		
	9. Sketch graphs of absolute value function, square root function, simple		
	hyperbolas such as y - $1/x$ , multi-part function, and simple functions which		
	graph as a line with a point missing.		
	10. Recognize, from the form of the function, how it is translated, stretched, and/or		
	reflected. Apply these concepts to graphing the functions.		
	1. Understand the concept of a limit intuitively.		
	2. Find limits of simple functions		
	3. Understand the development of the derivative from the slope of the secant line.		
	4. Recognize and write first and higher order derivatives in all standard notations.		
	5. Find derivatives using the power rule, the constant multiple rule the sum rule.		
The Derivative	6. Use the derivative to determine the slope of a curve at a point on the curve.		
<u>The Derivative</u>	7. Use the derivative to determine the equation of both the tangent and normal		
	line to the curve at a specified point.		
	8. Utilize the derivative in finding rates of change, including, but not limited to,		
	velocity and acceleration.		
	9. Understand the meaning of/be able to determine marginal cost, revenue,		
	and profit functions.		
	1. Use the product rule for differentiation.		
Techniques of Differentiation	2. Use the quotient rule for differentiation.		
	3. Use the chain rule to differentiate composite functions		
	1. Use derivatives to determine where a function is increasing and decreasing.		
	2. Use derivatives to determine both local and global extreme points.		
Applications of the Derivative	3. Use derivatives to determine concavity.		
Applications of the Derivative	4. Use derivatives to determine inflection points.		
	5. Sketch the graph of a function utilizing the derivative.		
	6. Solve optimization problems involving constraint equations		
	1. Simplify exponential expressions.		
	2. Solve exponential equations.		
	3. Differentiate exponential type functions.		
The Exponential Function	4. Sketch the graph of various exponential functions.		
The Exponential I diletion	5. Solve differential equations of the form $y' = ky$ .		
	6. Solve exponential growth and decay problems.		
	7. Solve problems involving interest compounded continuously.		
	1. State, use, and understand properties of logarithm functions, (log and ln.)		
The Natural Logarithm	2. Understand and "manipulate" equations involving logarithmic and exponential		
Function	functions, including bases other than e.		
	3. Find derivatives of functions involving logarithms, including, but not limited		
	to, the natural logarithm function.		
	1. Antidifferentiate functions, including substitution.		
	2. Evaluate definite integrals, including algebraic and exponential functions.		
Internetier	5. Use the definite integral to find area both under and between two curves.		
Integration	4. Use the definite integral to find the average value of a function and consumer		
	and producer's surplus		
	5. Understand the relationship between a Kiemann Sum and the definite integral.		
	0.     Use Kiemann Sums to lead to area.       1.     Evaluate functions of second local laboration.		
Functions of Several	1. Evaluate functions of several variables.		
	2. Determine first and second partial derivatives.		
variables	5. Use first and second derivative tests to find extreme points for functions of		
	several variables.		

# Texts [and Supplies]

*Optional textbook*: <u>Calculus for Business, Economics, Life Sciences and Social Sciences</u>, 13<sup>th</sup> edition, written by Barnett, Ziegler & Byleen, published by Pearson, 2015.

# Required software: MathXL.

Use of *programmable* calculators will be required. I will use a TI-83+/TI-84 for all demonstrations and I recommend that calculator for you. You may be able to borrow one from the MAPEL Center if you do not have your own. Other models may be acceptable but students will need to assume responsibility for their calculator functions and capabilities. Students may NOT share calculators during graded assessments. No CAS (TI-89, etc.) calculators will be permitted during graded assessments. No electronic devices (cell phones, tablets, mp3 players, etc.) will be allowed during graded assessments.

You should also have a notebook for note taking and homework problem solving. The two notebook system works well for this course but is NOT required.

## Grading

## **Requirements**

In order to pass this course, a student MUST successfully earn a 70% or better on the calculated grade in this course, and he or she MUST take the final exam. In addition, a student cannot miss more than four (4) class meetings in this semester and still pass the class.

## Course Grade

Your grade will be based on your performance on homework assignments (worth up to 120 in total) and six exams (worth up to 600 points in total). Please note that NO grades will be dropped from the calculation of your final grade in this course.

If a student is absent for a test, the original grade will be 0. A retake will be required to improve that grade.

Retakes will be available during the final exam time slot. A student will be able to take up to two retakes, as long as he or she is qualified to do so. Qualification includes *earning* at least 85% of the points available in that unit's homework assignments. The retake grades will supersede the previous grades. I must receive an email from everyone, dated between *May 2<sup>nd</sup> and May 5<sup>th</sup>*, stating which test(s) you would like to retake – that means you must send me an email even if you wish to retake NO exams. This email must include your full name, which exams you wish to retake (test number AND chapters covered) and confirm the date and time of the final during which time the retakes will be administered.

The exams will be 10 to 20 open-ended questions and *no more than* 60 minutes in length. Partial credit will be awarded whenever possible.

There may be impromptu quizzes, exit cards, graded warm-ups and group work assigned in a given class period. Points earned on these assessments will be extra credit only. These are only available to students in attendance on the day of the assessment and CANNOT be made up.

Please note that this is a college-level course. Exams will include problems that require students to apply principles and concepts. While some of the exam questions will look like homework questions, others may not. Students will be asked to demonstrate their knowledge as well as synthesize their skills and concepts and apply their understanding to new problems.

## <u>Standards</u>

Your grade will be based on a maximum of 720 points. Grades will be assigned as follows:

<b>Point Total</b>	Grade
648-720+ points	Α
576-647.9 points	В
504-575.9 points	С
432-503.9 points	D
<432 points	F

#### **Homework Assignments**

Students must use the computerized software, MathXL, to complete their homework assignments. Homework is always due NO LATER than 8:00 AM on the day of the exam as noted. I do NOT accept late homework assignments. *NO EXCEPTIONS - really!* 

Yes, it is true that there may be up to 50-75 questions per test unit BUT you have two or more weeks to complete each one – that means you only have to do 6-10 problems each day!

There is help available to you within the homework software as well as with me or in the MAPEL Center (229HTSC).

Within MathXL, you will see homework assignments with due dates, named by the chapter to which they apply. These impact your grade and are due as noted. They are the ones that affect your eligibility for a retake as well. In addition, there are videos and PowerPoints, practice assignments and practice tests included in MathXL. These are NOT due and do NOT impact your actual grade. The videos and Power Points are optional but strongly recommended, especially if you miss class or do not understand a particular topic.

The practice tests are the same length as the actual tests and they will help you pace yourself as well as review the course content covered on an upcoming exam, which are traditional paper and pencil tests. You may take the practice tests as many times as you like or not at all. It is totally up to you.

## Late Policy

I expect students to be on time to and in attendance at <u>all</u> class meetings. The student is RESPONSIBLE for anything missed during his or her absence. I will NOT reteach a topic because a student missed the class or part of the class in which it was covered. If you come in late, do not be disruptive to your classmates, who managed to get to class on time. If tardiness becomes a habit, not only should you expect that it will affect your grade, but you will be asked to modify the behavior promptly.

Please note that I will count three (3) "partials" as one (1) absence, and students are only allowed four (4) absences in the semester if they expect to pass the course. A "partial" is a class in which a student arrives after I have taken attendance and/or leaves before I have dismissed the class.

Students will NOT be permitted to enter the classroom late on the day of *any* test! NO EXCEPTIONS - really!

Get yourself a buddy in the class – someone to study with, get notes from in the event of an absence, etc.

## Audit Policy

A student who has registered for AUDIT in this class is just like the student who registered for credit. He or she MUST take the quizzes, attend classes and turn in completed homework on time. The only difference between an AUDIT student and a CREDIT student in this class is what grade appears (or does not appear) on the transcript. There is no other way for either one of us to assess if you are acquiring the knowledge.

## **Classroom Policies**

# Attendance [and Withdrawal from Class]

As mentioned above, attendance counts. Not only does it directly affect the student's grade but it also affects the comprehension of the material covered. In addition, in-class activities will be done periodically throughout the semester to enhance the students' comprehension of the topics addressed. ONLY those students in attendance on that day will have access to an in-class activity; these WILL be announced beforehand.

The last day to drop the class with a refund is <u>January 28</u>. The last day to change to audit is <u>February 11</u>. The last day to drop the class without a grade is <u>February 11</u>. The last day to drop the class with a grade is <u>April 15</u>.

I will NOT drop you for poor attendance or excessive tardiness...but you need to master this material to move on in your mathematics education as well as succeed in your future endeavors. .

#### **Academic Honesty**

The maintenance of the highest standards of intellectual honesty is the concern of every student and faculty member at Montgomery College. The College is committed to imposing appropriate sanctions for breaches of academic honesty. Academic dishonesty or misconduct can occur in many ways. The following are a few examples: plagiarism, cheating on examinations, copying a friend's homework assignment. This IS dishonest and a form of cheating, even if you worked on the assignment together! Working together IS okay but you need to learn this material for yourself! I will either fail you for the homework or test on which you were dishonest OR for the course, depending on the individual circumstances.

## **Time Commitment for Academic Success**

Students are expected to invest a minimum of two hours completing out-of-class course work for every hour of inclass instructional time. For example, in a 4-credit course, students experience at least 50 hours of instructional time and should invest a minimum of 100 hours in out-of-class time preparing for the course and completing assignments throughout the semester. In a 15-week, 4-credit course such as this one, it equates to an average <u>minimum</u> of 6.7 hours *per week* outside of class and 3.3 hours *per week* in class.

## **Classroom Conduct**

The College seeks to provide an environment where discussion and expression of all views relevant to the subject matter of the class are recognized as necessary to the educational process. However, students do not have the right to interfere with the freedom of the faculty to teach or the rights of other students to learn.

If a student behaves disruptively in the classroom, the student may be asked to leave the room for the remainder of the class time. If the student does not leave, the faculty member may call Security.

#### **Support Services**

## Math, Accounting, Physics and Engineering Learning Center (MAPELC)

This math tutoring center is open more than 80 hours each week, six or seven days a week, and is located in room HT229. Please visit for details and hours.

#### **Disability Support Services**

A student who may need an accommodation due to a disability should make an appointment to see Harry Zarin or Harvey Stempel, counselors for students with disabilities at the Germantown Campus. A letter from Disability Support Services (DSS) authorizing your accommodations will be required. A 24-hour TTY phone is available at 240/567-2133. The campus's main switchboard can receive TTY calls 240/567-7000.

Any student who may need assistance in the event of an emergency evacuation must identify themselves to the Student Development Office as soon as the semester begins so that appropriate support can be provided in the event of an emergency.

## Student MC-Email Use

Student e-mail (montgomerycollege.edu) is an official means of communication for the College. It is expected that you check your student e-mail regularly and frequently, as you are responsible for information and announcements that will be sent to you from the College.

You are responsible for checking your MC email; I do not assign work via email (it is all assigned here in the syllabus), but I do make announcements there and you are responsible for getting that information. Be sure the college and you agree on the email address! If you email me, be sure to include your name in the content of the note; I have no way of identifying you otherwise. Also, be sure to use proper grammar, spelling and punctuation in your email. I am not your buddy; we have a professional relationship and I will treat you that way and expect the same in return. . Emails written in "text message language" or with excessively poor punctuation or grammar will not receive a response from the professor, or the student will be asked to resend the email appropriately.

# **Cancellation of Classes**

If inclement weather or power outages force the College or any campus or College facility to suspend classes or close, public service announcements will be provided to local radio and television stations as early as possible. Unless you hear an announcement that classes are cancelled or the College is closed, you should assume that classes will be held.

NOTE: The closing of Montgomery County Public Schools does NOT indicate the closing of Montgomery College.

The following radio and television stations usually broadcast information about College closings. WAMU (88.5 FM); WETA (90.0 FM); WMAL (630 AM); WINX (1600 AM); WRC (980 AM); WTOP (1500 AM); Channels 4, 7, 9 TV.

You may also call Montgomery College at 240/567-5000 or check the web at www.montgomerycollege.edu

On occasion, MC will announce a delayed opening or early closing of a specific campus or the entire college because of weather conditions or other emergency. Since classes begin at various times throughout the day, a late opening or early closing will occur during a scheduled class period.

- If the college opens or closes at a time when more than 50% of a class period will be missed, that class will be cancelled for the day.
- If less than 50% of a class will be missed, that class will meet for the remaining portion of its regularly scheduled time.
- For the most up-to-date information regarding MC openings, closings, or emergencies, all students are encouraged to sign up for email and text alerts via the Montgomery County MC ALERT at <a href="https://alert.montgomerycountymd.gov/index.php?Ccheck=1">https://alert.montgomerycountymd.gov/index.php?Ccheck=1</a>.

## **Professor's Policies**

- I am a resource to you. Use me as such. I know a lot but not everything. I continue to learn all the time. If I do not know the answer to your question, I will find out or find someone who can help.
- If you call me and leave a message, I will return it promptly. Be sure to include your name and phone number FIRST in any message. If I do not return your call within 24 hours, please call me again. You can also e-mail me at the address above.
- If you have a learning disability and need special accommodations, please see me ASAP so arrangements can be made. If you have a physical disability which may require assistance in case of an emergency evacuation, please let me know immediately.
- No cell phones are permitted in class. If your cell phone goes off during class, you will be considered absent for that class period...REALLY! If it goes off during an exam, you will receive a 0 for that exam.
- Whenever I grade tests, I give the benefit of the doubt on a response to the student, and I always look to award partial credit. I also return graded work to students as soon as possible after it is submitted, and I will discuss the results and address challenging questions to the class as a whole. However, I am human and

sometimes, I do make mistakes or misinterpret a student's response. Therefore, graded work may be resubmitted to me for regrading within a week from the time the work is returned to the class. I will regrade the work completely, as if I have never seen it before, but I will pay particular attention to the specific item(s) of concern. This does *NOT* mean you can re-do an assignment in order to improve your grade; this policy is to allow me to review your original work in a timely manner in case grading errors were committed during the initial review.

On the day of a test, *no one* will be allowed to enter the classroom after the test has begun...*really*.

#### **Course Schedule:**

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Text/Software	Dates MW	Topic(s)
	TR	
Chapter 1	1/23, 1/28 1/22, 1/24, 1/29	Intro to course, software, etc. Functions, Graphs, Models
Exam I	1/30 1/31	Homework I due; Exam I
Chapter 2	2/4-2/13 2/5-2/14	Limits, Continuity and Derivatives
Exam II	2/18 2/19	Homework II due; Exam II
Chapter 3	2/20-3/4 2/21-3/5	More Differentiation
Exam III	3/6 3/7	Homework III due; Exam III
Chapter 4	3/18-3/27 3/19-3/28	Derivatives and Graphs, Optimization
Exam IV	4/1 4/2	Homework IV due; Exam IV
Chapter 5	4/3-4/15 4/4-4/16	Antiderviatives and Integrals
Exam V	4/22 4/23	Homework V due; Exam V
Chapters 6 & 7	4/17, 4/24-29 4/18, 4/25-4/30	Area Between Curves, Functions With Several Variables and Their Derivatives
Exam VI	5/1 5/2	Homework VI due; Exam VI
Review Day	5/6	
Final Exam Scheduled – Retakes available	5/8 7:55-10 AM 5/9 2:45-4:50 PM	7:55-8:55 and 9-10 2:45-3:45 and 3:50-4:50

\* NOTE: There is no class from March 11 through March 17 for Spring Break.