

COURSE SYLLABUS

GENERAL COURSE INFORMATION

| | |
|---------------------------|-----------------------|
| Course Title | Math 181 – Calculus I |
| CRN | |
| Semester | Spring 2019 |
| Course Duration | |
| Lecture Time/Day/Location | |

INSTRUCTOR INFORMATION

| | |
|-------------------|------------------------------------|
| Name | Dr. Mary E. Hopkins |
| Office | Science Center, 254B |
| Email | mary.hopkins@montgomerycollege.edu |
| Cell | 443-545-9999 |
| Office Hours/Days | |

COURSE DESCRIPTION

Intended primarily for students of physical sciences, engineering, & mathematics. It is an introduction to the major ideas of single variable calculus. Topics include limits, derivatives, integrals & applications of algebraic & transcendental functions. The text uses a 4-fold approach (analytical, graphical, numerical, and verbal) to problem solving. Applications incorporating problem solving presented in the context of real world situations with an emphasis on model creation and interpretation should be integrated throughout the course. Note that for computation of tuition, this course is equivalent to five semester hours.

COURSE PREREQUISITES

Students must have earned a grade of C or better in MATH 165, an appropriate score on mathematics assessment test, or the consent of department. Assessment Levels: ENGL 101/101A, READ 120.

REQUIRED MATERIALS

| | |
|-----------------------------------|---|
| (1) E-book Version of Text | <ul style="list-style-type: none"> James Stewart, <i>Calculus: Concepts and Contexts</i>, 4th Ed., Cengage, 2010 Students do NOT need to buy a print copy of text. The e-book is included with your WebAssign access. In addition, there is a print copy of the text at the Math/Science Center. |
| (2) WebAssign Access | Purchase the access code for our class on WebAssign. <ul style="list-style-type: none"> https://www.webassign.net/v4cgi/selfenroll/classkey.html The course key for our class is montgomerycollege xxxxxxxx |
| (3) Graphing Calculator | Students must have and bring to each class a TI-83 or TI-84. <ul style="list-style-type: none"> Plus is acceptable but NO INSPIRE. The Math/Science Center has TI calculators to check out for the semester. |

COMMUNICATION

- The official means of communication will be your *MONTGOMERY COLLEGE EMAIL & BLACKBOARD (BB)*.
- You are expected to check your email & BB accounts daily.
- I will also use the online communication tool called **Remind** (<https://www.remind.com>) that allows you to receive important announcements via text message.
- To sign –up, text the message “@xxxxxx” to the number 81010.

GENERAL EDUCATION REQUIREMENTS

- MATH 181 fulfills the requirement for General Ed. Math Foundation and for a general elective.
- Montgomery College’s General Education Program is designed to ensure that students have the skills, knowledge and attitudes to carry them successfully through their work and personal lives.
- This course provides multiple opportunities to develop two or more of the following competencies: written and oral communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy. For more information, please see www.montgomerycollege.edu/gened.
- MATH 181 fulfills Fundamental Math & Analytic Reasoning Gen Ed requirements for UMCP.

COURSEWORK REQUIREMENTS AND GRADING WEIGHTS

| | | |
|-------------------|------------|---|
| Homework | 10% | ≈ 2 HW assignments per week to be completed on WebAssign. |
| Quizzes | 10% | ≈ 1 Quiz per week to be completed in class & occasionally on WebAssign. |
| Tests (3) | 55% | 3 Tests will be administered in class. |
| Final Exam | 25% | Cumulative final exam will be administered in class on 12/11/17 at 10:15 am – 12:15 pm. |

IMPORTANT DATES**Last Day to Drop with ...**

| | |
|---|---------|
| 94 % Refund & No Grade | 2/1/18 |
| 80% Refund & No Grade or Change to Audit/Credit | 2/15/18 |
| 27% Refund & Withdraw | 4/17/18 |

Final Exam

| | |
|------------|-----------------------------|
| Final Exam | May 7, 2019 at 8 am – 10 am |
|------------|-----------------------------|

TEST AND FINAL EXAM POLICY

- There will be 3 tests throughout the semester.
- Tests and the final exam must be taken on their scheduled days.
- A tentative schedule of exam dates is included in the syllabus.
- No exams will be administered early/late.
- Students have the duration of the class (85 minutes) to complete each test.
- Prior to each test, students will be informed whether or not TI calculators will be allowed. There may be times when students can use their calculators for only a portion of the test.

HOMEWORK/WEBASSIGN POLICY

- HW assignments will be completed on WebAssign.
- There will be 2-3 HW assignments posted on WebAssign every week.
Any HW assignments that are completed after the due date (up to 2 weeks after original due date) will receive a 20% deduction for any problems completed after the due date.

MAKE-UP POLICY

- It is expected that students take all quizzes/tests when scheduled. There are no make-ups for quizzes/tests.

- Quizzes/tests will NOT be administered early or late.
- No test scores are dropped.
- HWs (on WebAssign) can be handed in up to 2 weeks after the due date, with a 20% penalty deduction.
- **If you miss class, then DO NOT ASK ME WHAT YOU MISSED OR WHAT I COVERED...**
... ask another student and/or check Blackboard for any new postings!!!

CELL PHONE POLICY

Cell phones are not to be seen or used in class. A student who has a cell phone visible during a test or a quiz will receive a grade of zero. Your cell phone CANNOT be used in place of your TI-83/84.

ATTENDANCE POLICY

Students that miss a total of four or more classes may be dropped from the class. It is each student's responsibility to make sure that they have been counted present on the attendance sheet. Also, it is your responsibility to find out what you missed. DO NOT email or call me to find out what you missed!! **If you are late for an exam, you will not receive any extra time.**

FORMULA POLICY

The Montgomery College mathematics department requires that the following definitions & formulas be tested without a formula sheet or calculator.

- Limit definition of continuity at a point and of the derivatives.
- Derivative of x^n , b^x , $\log_b x$, $\sin x$, $\cos x$, $\tan x$, $\sec x$, $\cot x$, $\csc x$, $\arctan x$, $\arcsin x$, etc.
- Product, Quotient and Chain Rule.
- Antiderivative of x^n , b^x , $\ln x$, $\sin x$, $\cos x$, $\tan x$, $\sec x$, $\cot x$, $\csc x$, $\frac{1}{1+x^2}$, $\frac{1}{\sqrt{1-x^2}}$, etc.

BLACKBOARD POLICY

- I will use Blackboard (BB) to post important announcements, links, assignments, keys to exams/quizzes, etc.
- There will be a discussion board on BB where students can post and answer each other's questions on HW problems, and I will respond to questions too!
- All grades will be posted on BB.
- Students are responsible for checking BB on a regular basis.

TUTORING AT THE ROCKVILLE MATH/SCIENCE CENTER

The Rockville Math Science Center is where students can receive free tutoring, find printed copies of our text and its solution manual, as well as **check out TI 83/84 calculators**. It is located on the ground floor of the new Science West (SW) building in room 109 and the phone number is 240-567-5200. The Fall 2017 hours are: **Mon-Thur 8am-8pm, Fri 8am-4pm, Sat 10am-3pm, Sun Closed**. For more details, please visit the website <http://www.montgomerycollege.edu/Departments/mathscr/>.

WRITING UP YOUR SOLUTIONS

- For all assignments (excluding WebAssign assignments), all work/steps must be shown. Justify your answers.
- To receive full credit, your solutions must be clear, organized, neat, detailed, and of course correct ☺.
- If the work is incorrect or missing, then no credit will be given ... even if the answer is correct!

VETERAN'S SERVICES

If you are a veteran or on active or reserve status and you are interested in information regarding opportunities, programs and/or services, please visit the Combat2College Web site at:
<http://cms.montgomerycollege.edu/edu/tertiary1.aspx?urlid=53>

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Any student who may need an accommodation due to a disability, please make an appointment to see me during my office hours. To receive accommodations, a letter from Disability Support Services (RCB122; G-SA175; or TP-ST120) 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 are at: www.montgomerycollege.edu/dss/evacprocedures.htm.

STANDARDS OF COLLEGE BEHAVIOR

Montgomery College seeks to provide an environment where discussion & expression of all views relevant to the subject matter of the class are recognized. However, students don't have the right to interfere w/the faculty member's right to teach or the other students' rights to learn. Faculty & staff set standards of behavior that are w/in the guidelines & spirit of the Student Code of Conduct or other College policies for classrooms, events, offices, etc., by announcing or posting these standards early in the semester. For more information, please refer to number 42001 in <http://cms.montgomerycollege.edu/pnp/#Chapter4>.

ACADEMIC MISCONDUCT & HONESTY

Academic dishonesty in college is a very serious offense. Each student is expected to do his/her own work on all quizzes and tests and class and homework exercises. Students who engage in any act that the classroom instructor judges to be academic dishonesty or misconduct are subject to sanctions. For more information, please refer to Number 42001 in <http://cms.montgomerycollege.edu/pnp/#Chapter4>.

INCLEMENT WEATHER

If inclement weather forces 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. You may also call MC at 240-567-5000 or check www.montgomerycollege.edu to verify MC school closings. Any exams planned on days classes are suspended will be administered at the first class meeting once classes resume. Here is the link to sign up for text alerts: <http://cms.montgomerycollege.edu/wdce/inclementweather.html>.

Grading Scale

A: $\geq 90\%$

B: 80 – 89.999

C: 70 – 79.999

D: 60 – 69.999

F: ≤ 59.999

CHAPTERS/SECTIONS COVERED FROM OUR TEXT

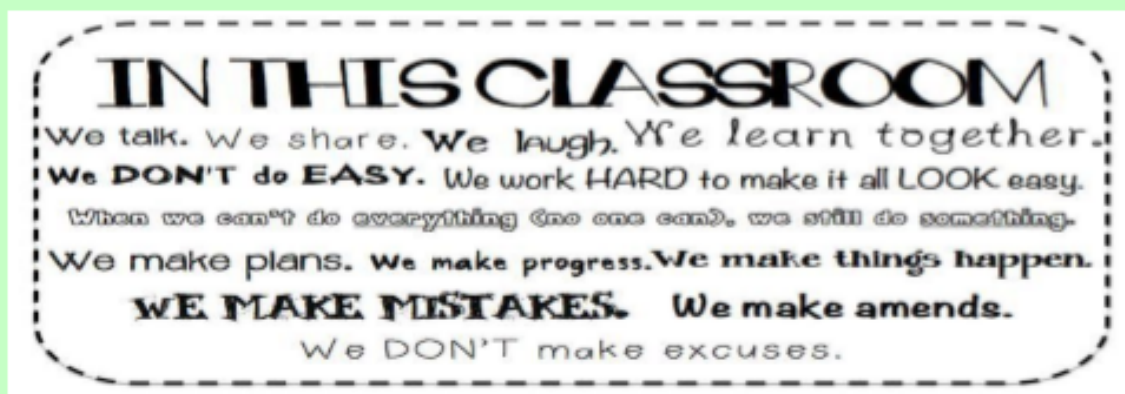
James Stewart, **Calculus: Concepts and Contexts**, 4th Ed., Cengage, 2010

The course will cover sections 2.1 – 2.8, 3.1 – 3.9, 4.1 – 4.8, 5.1 – 5.4 of the textbook, along with a few optional topics.

TENTATIVE Schedule of Topics and Exams

| Week/Dates | Section/Topic |
|------------|--|
| 1 | 2.1 – Tangent and Velocity Problems 2.2 – Limit of a Function 2.3 – Calculating Limits Using Limit Laws |
| 2 | 2.4 – Continuity 2.5 – Infinite Limits |
| 3 | 2.5 – Limits at Infinity 2.6 – Derivatives and Rates of Change 2.7 – The Derivative as a Function |
| 4 | 2.8 – What does f' says about f ? "Catch-up" & Review for Exam 1 & Completion of Exam 1 |
| 5 | 3.1 – Derivatives of Polynomials & Exponential Functions 3.2 – Product & Quotient Rules 3.3 – Derivative of Trigonometric Functions |
| 6 | 3.4 – The Chain Rule 3.5 – Implicit Differentiation 3.6 – Derivative of Inverse Trigonometric Functions |
| 7 | 3.7 – Derivative of Logarithmic Functions 3.8 – Rate of Change in the Natural & Social Sciences 3.9 – Linear Approximations |
| 8 | 4.1 – Related Rates "Catch-up" & Review for Exam 2 & Completion of Exam 2 |
| 9 | 4.2 – Maximum and Minimum Values (Extreme Value Theorem.) 4.3 – Derivative of f and Graph of f (MVT, Increasing/Decreasing, Concavity, 1 st and 2 nd Deriv. Test) 4.4 – Graphing with Calculus |
| 10 | 4.4 – More Graphing 4.6 – Optimization Problems 4.7 – Newton's Method |
| 11 | 4.8 – Antiderivatives 5.1 – Area & Distance 5.2 – The Definite Integral |
| 12 | 5.3 – Evaluating Definite Integrals 5.4 – The Fundamental Theorem of Calculus "Catch-up" & Review for Exam 3 & Completion of Exam 3 |
| 13 | 5.5 – u-Substitution "Catch-up" & Review for Final Exam |
| 14 | Cumulative Final Exam Monday May 7, 2018 12:30 pm – 2:30 pm |

PROBLEM SOLVING TIPS



1. Don't be afraid to think!!!
2. You **MUST** spend time brainstorming to get a feel for what is going on. What exactly are they asking? What are the assumptions? How can I translate this into math? You may come up with some clever solution that no one else would have thought of!!
3. Start w/ drawing a figure to visually model what is going on. Which quantities are constant vs. changing? Assign variables to changing quantities.
4. Try building an equation that expresses the relationship between known & unknown quantities.
5. When you get to a point where you don't know what to do next, then put it down for a while. Take a break. Go on a hike or have a glass of wine (only if ≥ 21 years old!!). Come back to it later with a fresh mind!!
6. Don't give up!!!! Take each problem as a personal challenge!!!
7. And always remember the following.
 - a) If you are only willing to dedicate 15 minutes to solving a problem, then you will **NEVER** solve any problem of significance.
 - b) When working on a problem, never think "I can't solve it." Think "I haven't solved it **YET**."
 - c) Complex, multi-stepped problem solving is a skill that will serve you well throughout your life.
8. Learn to be "**Academically Scrappy**"!