

MONTGOMERY COLLEGE - Germantown Campus
Mathematics & Statistics Department
Course Syllabus

I. Instructor Information

Professor: Zhou Dong

Email: Zhou.Dong@MontgomeryCollege.edu

Phone: (240) 567-7810

Office: HT 134 Germantown campus

Office Hours:

Office hours	MWF 9:30 am – 11:00 am in HT134
Appointment hours	MT 1:00 pm – 2:30 pm
Click here to book an appointment	

II. General Course Information

Calculus II – MATH182 (Formerly MA182)

4 credits / 5 hours (For computation of tuition, this course is equivalent to five semester hours. Five hours each week.)

A continuation of MATH 181; intended primarily for students of the physical sciences, engineering, and mathematics. Further differentiation and integration of transcendental functions. Methods of integration with applications, indeterminate forms, improper integrals, Taylor's formula; infinite series; polar coordinates.

PREREQUISITE:

A grade of C or better in MATH 181 or equivalent, or consent of department.

Fall 2022: CRN 23632

Class Times: TR 10:00 am – 12:10 pm

Class Room: HT 400

III. Common Course Student Learning Outcomes

Upon course completion, a student will be able to:

- Evaluate integrals by using the appropriate techniques.
- Approximate definite integrals by using appropriate numerical techniques.
- Find limits involving indeterminate forms.
- Evaluate improper integrals.
- Set up, evaluate, and interpret integrals that represent arc length, area, volume, and average value.
- Set up, evaluate, and interpret integrals that model applications in physics.

- Solve selected differential equations using graphical, numerical, and analytic methods.
- Model applications such as population growth with differential equations.
- Determine the convergence or divergence of sequences and series.
- Represent functions with power series and approximate functions with Taylor polynomials.
- Graph polar equations.
- Use integration to find the area of a polar region.
- Use technology as an appropriate tool.

IV. Textbooks, Workbooks, and Supplies

Required materials for the course:

- *Single Variable Calculus: Concepts and Contexts* (5th edition), by James Stewart and Steve Kokoska, Brooks-Cole, 2022.
 - The ebook is available with WebAssign
- *WebAssign*
 - Online homework and the ebook
 - WebAssign Class Key: **montgomerycollege 4881 0194**
- *Graphing calculator*
 - TI graphing calculator (<http://wabbitemu.org/>)
 - Desmos (www.desmos.com/calculator)
- *Microsoft Teams*– for course announcements and communication outside of class
 - MC students can download these programs for free from their [Microsoft 365 account accessed through MyMC](#).
 - [Link to Team](#)
 - Join Code: **29nc515**

V. Course Design

This course is designed to give the student a high degree of autonomy and students are expected to self-direct their learning. While many resources are provided for the student to aid in their learning, **the final course grade is based solely on the student's mastery of the course standards as determined through assessments** (see section B. Course Grade for details). This means it is up to the student to determine which resources to use (e.g. class attendance, textbook, lecture videos, online practice problems, etc.) in order to gain mastery of the course standards. Feedback on all assignments are provided for learning purposes only and will not affect the student's final course grade.

A. Bloom's Taxonomy

This class has been designed based on Bloom's Taxonomy. A basic understanding of Bloom's Taxonomy will help the student understand the course design as well as make better choices about how best to gain mastery of the material and be successful in this class.

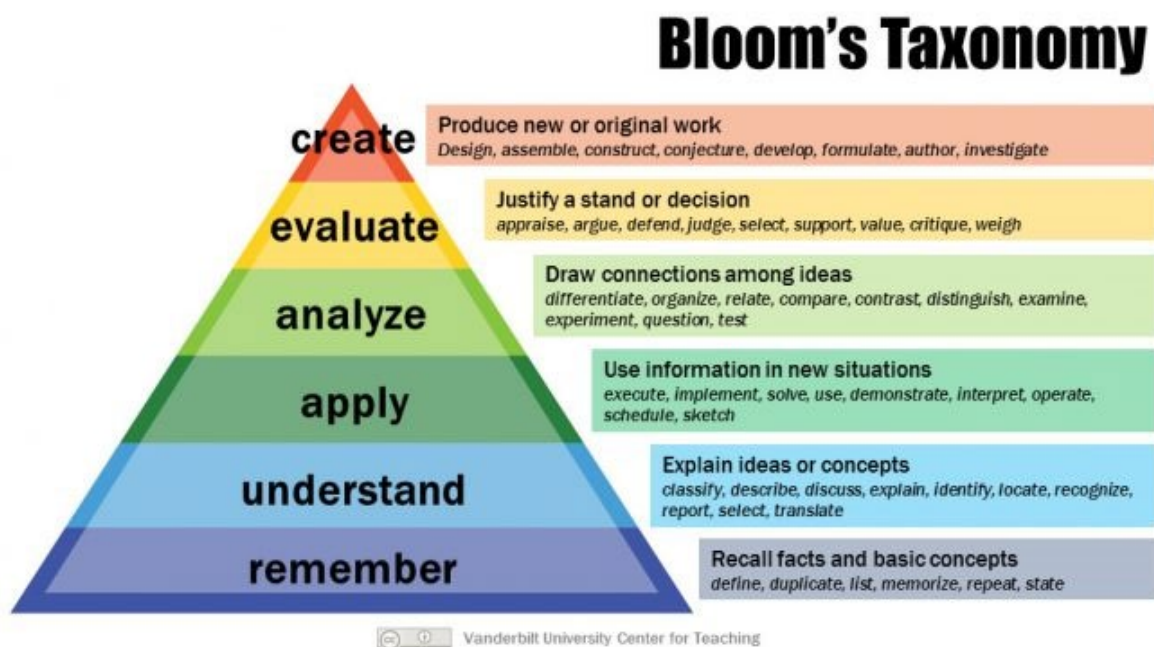


Figure 1 - Bloom's Taxonomy, from <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>

B. Flipped Classroom Instruction

Under the flipped classroom model, students begin learning the course material at home before class, while class time is focused on solidifying understanding through active discussion and problems solving:

Before class:

- Read textbook or lecture slides, or watch lecture videos
- Self-assess using Pre-class Assessment on WebAssign
- Prepare questions for class discussion

During class:

- Participate in class discussion
- Work in groups or individually on in-class assignments
- Receive individual and/or small group instruction as needed
- Take assessments as scheduled

After class:

- Complete Practice Problem Assignments on WebAssign
- Take practice quizzes in the Personal Study Plan on WebAssign
- Get help from instructor during office hours or by appointment
- Utilize MAPEL Center tutoring

The Flipped Classroom

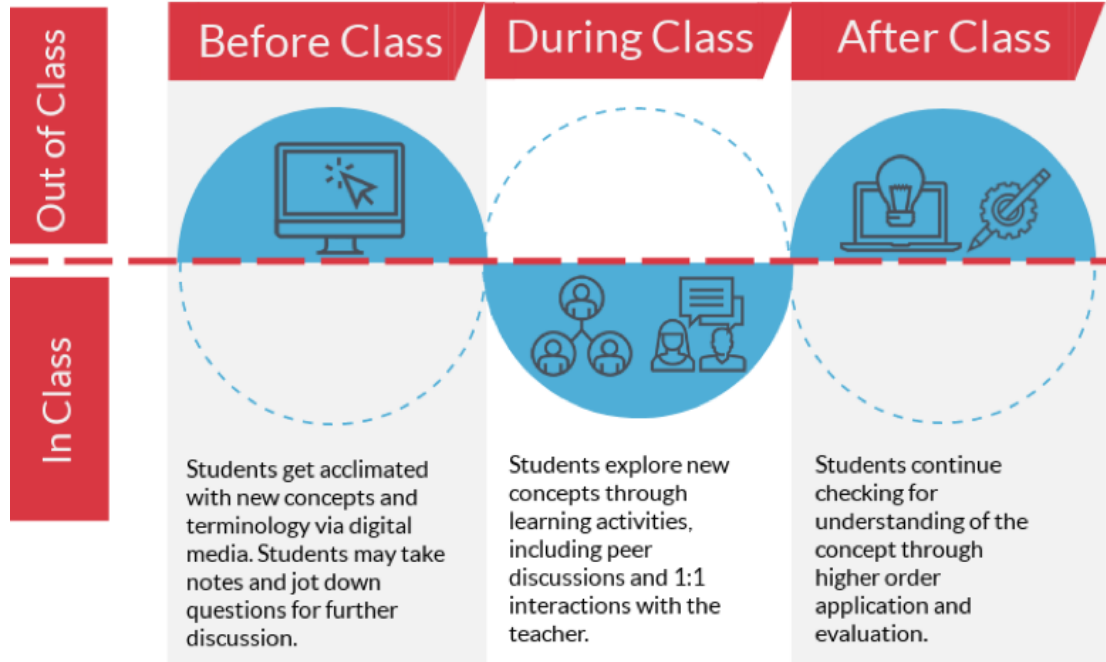


Figure 2 - The Flipped Classroom, from <https://www.odysseyware.com/blog/using-classpace-flipped-classroom>

Bloom's Taxonomy in a Flipped Classroom

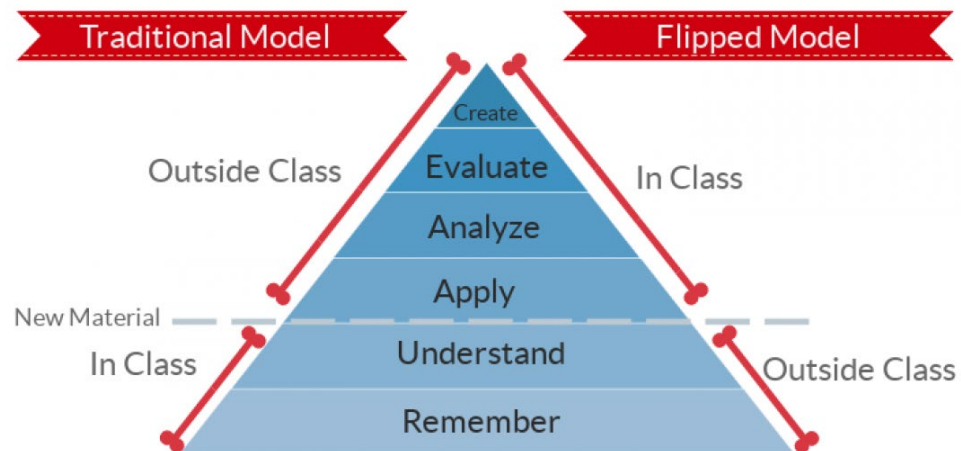


Figure 3- Bloom's Taxonomy in a Flipped Classroom, from <https://www.odysseyware.com/blog/using-classpace-flipped-classroom>

While preparing for class, students have their initial exposure to the new material through reading the textbook and lecture slides and watching lecture videos. The focus at this time is on the *Remember* and *Understand* levels of Bloom's Taxonomy:

- Memorize definitions and theorems
- Paraphrase definitions and theorems

- Understand worked examples

During class, students work with each other and the instructor to develop the *Apply*, *Analyze*, and *Evaluate* levels of Bloom's Taxonomy. Occasionally, students are expected to reach the *Create* level of Bloom's Taxonomy. After class, students should focus on consolidating their learning through additional practice and self-assessment in order to demonstrate mastery of course standards.

It is essential that students put in the time and effort necessary in and out of class. It is generally recommended that for each hour of in-class time, the student spends 2-3 hours out of class studying. This class meets for 5 hours each week, therefore, ***students should expect to spend 10 – 15 hours outside class time studying for this class.***

VI. Course Requirements

A. Course Standards

This course uses Standards Based Grading (SBG). Under SBG, students are graded based on demonstrated mastery of the course standards. The standards are separated into core standards and elective standards. The core standards are essential material and EACH standard must be mastered in order to earn a grade of "C" or above. Most core standards are at the Apply and Analyze levels of Bloom's Taxonomy. The elective standards are either optional topics or a higher level question for a core standard topic. Detailed grading criteria can be found in section D. Course Grade and section E. Standards.

B. Course Grade

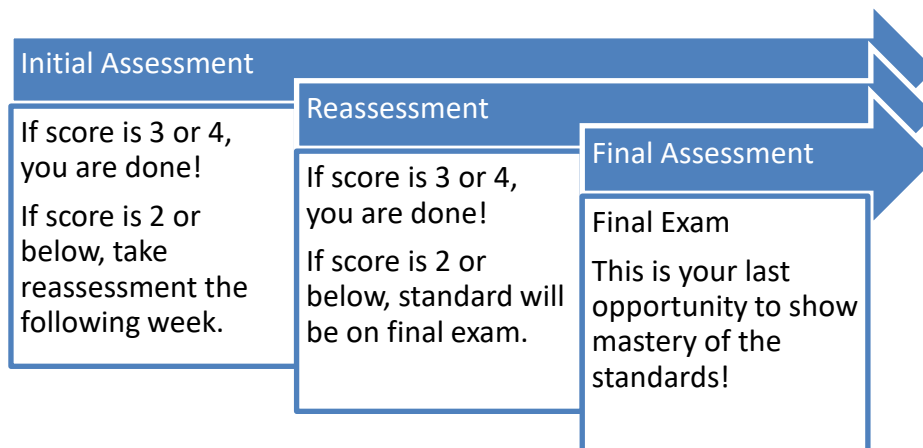
This course uses Standards Based Grading. Your course grade will be based solely on mastery of the course standards. Assessments of standards will be graded as follows:

Score	Mastery Level	Student work
4	Perfect Mastery	Demonstrates complete understanding of the underlying concept and provides correct solution with appropriate notation and use of language
3	Imperfect Mastery	Demonstrates complete understanding of the underlying concept but has minor errors in calculation and/or problems with notation and use of language
2	Developing	Demonstrates developing but incomplete understanding of the concept and/or major errors in the computation and presentation of the solution
1	Novice	Demonstrates little to no understanding of the concept with some relevant computations
0	No evidence	Demonstrates no evidence of understanding or not attempted

Both Perfect Mastery (score = 4) and Imperfect Mastery (score = 3) are considered mastery. A student is only required to demonstrate mastery on a standard once.

There will be three (3) opportunities for demonstrating mastery on each standard:

1. Initial Assessment on Tuesdays
2. Reassessment on Thursdays
3. Final Assessment on the Final Exam



C. Standards

Final letter grades will be determined according to this rubric:

Grade	Core Standards	All standards (Core and Elective)
A	Mastery on all	Average score is 3.5 or above
B	Mastery on all	Average score is between 3 and 3.5
C	Mastery on all	Average score is below 3
D	Not all mastered	Average score is above 2
F	Not all mastered	Average score is below 2

Note:

- Mastery means a score of 3 or 4.
- For the grades of A, B, or C, you must demonstrate mastery on ALL Core Standards.

D. Assessments and Make-up Policy

Initial Assessments will take place on Tuesday starting on Week 2.

Reassessments will take place on Thursdays starting on Week 3. All assessments in this class are closed-notes, closed-book, and individual. No collaboration is allowed on any assessment.

Make-ups for missed assessments will not be available. All WebAssign assignments have been setup for automatic extensions when requested.

VII. Student Code of Conduct

A. Standards of College Behavior and Academic Honesty

Students are expected to adhere to the Montgomery College Student Code of Conduct (https://www.montgomerycollege.edu/_documents/policies-and-procedures/42001-student-code-of-conduct.pdf).

In particular, students should also familiarize themselves with the following excerpt regarding academic dishonesty:

https://www.montgomerycollege.edu/_documents/academics/support/learning-centers/writing-reading-learning-ctr-germantown/academic-dishonesty-and-how-it-is-handled.pdf

B. Return to Campus

Students coming to campus are expected to adhere to Montgomery College's policies on returning to campus: <https://www.montgomerycollege.edu/return-to-campus/index.html>

VIII. Collegewide Policies and Procedures

A. Attendance Policy

Students are encouraged to attend and actively participate in all class meetings. As group work is often part of class, students who regularly miss class will no longer be assigned a group. Students who miss more than one week of class and assessments may be dropped from the course for excessive absences as per the Montgomery College [Academic Regulations and Standards](#).

B. Withdrawal and Refund Dates

- Refund Drop Deadline – September 7, 2022
- No Grade Drop & Audit/Credit Deadline – September 21, 2022
- W Grade Drop Deadline – November 16, 2022

C. Audit Policy

All students registered for audit are required to consult with the instructor before or during the first class session in which they are in audit status, and students are required to participate in all course activities unless otherwise agreed upon by the student and instructor at the time of consultation. Failure to consult with the instructor or to so participate may result in the grade of “W” being awarded. This action may be taken by the instructor by changing the “AU” to “W” before the drop with “W” date.

D. Disability Support Services

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 (G-SA 189; R-CB 122; or TP/SS-ST 122) 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>

E. 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 website at <http://www.montgomerycollege.edu/combat2college>

F. Delayed Opening or Closing of the College

If a class can meet for 50% or more of its regularly scheduled meeting time OR if the class can meet for 50 minutes or more, it will meet. Montgomery College will always operate on its regular schedule unless otherwise announced. Depending on the nature of the incident, notifications of emergencies and changes to the College's operational status will be communicated through one or more communication methods including the College's website <http://www.montgomerycollege.edu>. 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 Montgomery College ALERT. Registration information is available at <http://www.montgomerycollege.edu/emergency>.

G. Communication

This course will use your official Montgomery College email address, Microsoft Teams, and Microsoft OneNote for communication. This course will NOT use Blackboard for communication.

IX. Honors Module

This class has an attached honors module for eligible students. Enrollment is limited to students who meet Honors Program eligibility standards. If you are interested in taking this as an honors class, you must meet with the instructor during the first two weeks of classes.

A. Honors Eligibility

- Completion of at least 12 Montgomery College credits
- Cumulative 3.4 grade point average or higher
- Grade of A or B in ENGL 101 or ENGL 101A

X. Schedule

A. Class Meeting Schedule

MATH 182 Spring 2022 Class Meeting Schedule				
Week	Date	Topic	Initial Assessment	Reassessments
1	Tue 8/30	Course Introduction and Calculus I Review		
	Thu 9/01	5.5 The Substitution Rule		
2	Tue 9/06	5.6 Integration by Parts	5.5	

	Thu 9/08	5.7 Additional Techniques of Integration (Trig)		
	Tue 9/13	5.7 Additional Techniques of Integration (Partial Fractions)	5.6	
3	Thu 9/15	5.8 Integration Using Tables and CAS, 5.9 Approximate Integration		5.5
	Tue 9/20	5.10 Improper Integrals	5.7, 5.8, 5.9	
4	Thu 9/22	6.1 Area, 6.2 Volume (1)		5.6
	Tue 9/27	6.2 Volume (2)	5.10, 6.1	
5	Thu 9/29	6.3 Volume by Cylindrical Shells		5.7, 5.8, 5.9
	Tue 10/04	6.4 Arc Length, 6.5 Average Value	6.2, 6.3	
6	Thu 10/06	6.6 & 6.7 Applications to Physics and Engineering, Economics and Biology		5.10, 6.1
	Tue 10/11	6.8 Probability, Appendix H Polar Coordinates (1)	6.4, 6.5, 6.6, 6.7	
7	Thu 10/13	Appendix H Polar Coordinates (2)		6.2, 6.3
	Tue 10/18	8.1 Sequences	6.8, Ap. H	
8	Thu 10/20	8.2 Series		6.4, 6.5, 6.6, 6.7
	Tue 10/25	8.3 The Integral and Comparison Tests; Estimating Sums	8.1, 8.2	
9	Thu 10/27	8.4 Other Convergence Tests		6.8, Ap. H
	Tue 11/01	8.5 Power Series	8.3, 8.4	
10	Thu 11/03	8.6 Representation of Functions as Power Series		8.1, 8.2
	Tue 11/08	8.7 Taylor Series	8.5, 8.6	
11	Thu 11/10	8.8 Taylor Polynomials		8.3, 8.4
	Tue 11/15	7.1 Modeling with Differential Equations	8.7, 8.8	
12	Thu 11/17	7.2 Direction Fields and Euler's Method		8.5, 8.6
	Tue 11/22	7.3 Separable Equations	7.1, 7.2	
13	Thu 11/24	<i>Thanksgiving Break</i>		8.7, 8.8
	Tue 11/29	7.4 Exponential Growth and Decay	7.3	
14	Thu 12/01	7.5 The Logistic Equation		7.1, 7.2
	Tue 12/06	Predator-Prey System (optional)	7.4, 7.5	
15	Thu 12/08	Presentations/Final Exam Review		7.3
	Tue 12/13	Final Exam (10:15am - 12:15pm)		
<i>Notes:</i>	<i>Section 7.6 will not be assessed.</i>			
	<i>Sections 7.4 and 7.5 will be reassessed on the final exam.</i>			
	<i>If you should need a third attempt on 7.4 and 7.5, arrangements will be made for you to do so during Final Exam Week.</i>			

The professor reserves the right to make changes to this syllabus.

Last Updated August 29, 2022