Mukwonago High School

College Credit in High School

MATH 203 - Calculus and Analytic Geometry II

4 undergraduate credit hours

2025-2026

AP Calculus BC – Room 266

Period: Purple

Instructor Contact Information

Ms. Wolf
wolfje@masd.k12.wi.us
262-363-6200 x25266
Available for help before school every day at 7am and after school until 3:15pm, expect Wednesday afternoons.

*This class is a dual credit class in collaboration with the University of Wisconsin-Green Bay. Students at Mukwonago High School may choose to enroll for UWGB credits in addition to high school credit. This creates a college transcript; therefore, it creates a GPA for you which is **permanent**.*

This course counts for 1 math credit on your Mukwonago High School transcript.
Optional: Students taking this course will earn 4 undergraduate college credits on a UW-Green Bay transcript. The cost of tuition is $440 ($110 per credit).
You may take this class either as an AP class (AP exam fee applies), transcripted UWGB class, or both.

Prerequisites

AP Calculus AB

Students will need to earn a 3, 4, or 5 on the AP Calculus AB exam to be able to take this class as a UWGB college course

Course Overview/Description

This class will review all of the topics covered in AP Calculus AB. In addition, this course will cover advanced techniques of integration, analysis of two-dimensional motion with vectors, parametric, and polar equations, and sequences and series.

Course Learning Outcomes

Upon successful completion of MATH 203 - Calculus and Analytic Geometry II, students will be able to demonstrate good comprehension of problems related to:

- Substitution technique of integration and integration by parts
- Trigonometric identities and trigonometric substitution when integrating
- Integrals of rational functions with partial fractions
- Improper integrals
- Five approximations using Riemann sums
- Arc length and surface area using integration
- Integrals in polar coordinates
- Basic first order differential equations
- Integrals in applications from other fields of study (e.g. science, engineering, business, economic, or other)
- Converge/diverge series using the use of theorems, which are commonly called the test of divergence, integral test, comparison test, alternating series test, ratio test, and root tests
- Power series and power series representations of functions.
- The Taylor and Maclaurin series of functions,
- Taylor polynomials for functions

How to be successful in this course

Be present for every class and get to class on time. LISTEN during class. Try to anticipate what the teacher will say next. Speak up. Never think that you are asking a stupid question. If you are confused, you have a right to ask for clarification. Listen when others ask questions. When other students ask questions make sure you listen to both the question and the answer. Take notes. Review notes after class. If you don't understand all the steps done in class, go over them later. And if you still can't figure out how the problem works, visit your teacher outside of class. This lets your teacher know that you are trying to be successful.

Do the practice after each class. Once you've read over the notes and practiced some of the problems, try working some problems without looking at your notes or flipping back to the examples in your book. This simulates the test environment and helps you see how well you understand the material on your own. Before the next class, find some time to look over the practice from that day's lecture and try to work the problems. Look over any graded practice and assessments. Make sure you understand why you missed any points, and how to do the problems correctly. Since math is cumulative, you are likely to need these concepts in the future.

Have a positive attitude. Don't just do the minimum possible to get by. Try to understand what you are doing, even if it means practicing extra problems. It will pay off on the tests. Ask for help. Form study groups with other students. Don't wait until you are totally lost. Ask for help ANYTIME there is something you don't understand.

Grading Policies

Both quarters, combined, are worth 80% and the semester final is worth 20%

For each quarter: 20% Formative and/or Practice
80% Summative

Letter-grade scale

UWGB Grading Scale				High School Grading Scale	
Letter Grade	Text	Grade Points per Credit	Percent	Letter Grade	Percent
A	Excellent	4.0	92-100	A+	97-100
				A	93-96
AB	Very Good	3.5	89-91	A-	90-92
				B+	87-89
B	Good	3.0	82-88	B	83-86
				B-	80-82
BC	Above Average	2.5	79-81	C+	77-79
				C	73-76
C	Average	2.0	70-78	C-	70-72
				D+	67-69
D	Poor	1.0	60-69	D	63-66
				D-	60-62
F	Unacceptable	0.0	0-59	F	0-59

<u>Practice Policy</u>:

Daily work will be assigned and completion of daily work is necessary for success in this course. Practice must be in a notebook and properly labeled. Practice is to be submitted in Google Classroom. It is up to you to check your daily practice if you need help. A solution key is provided on Google Classroom to use anytime. I highly encourage you to use this solution key. Sometimes seeing a first step is all that is needed to get "unstuck" on a problem. If you are still stuck after consulting the solution key, please see me for additional assistance.

There will also be other types of practice (circuits, worksheets, bookwork, etc…) that will be collected from time to time.

Late Work/Missing Work Policy:

Mukwonago Area Schools believes that feedback is an integral component to student success in teaching and learning. Mukwonago High School expects that all students will turn in work by the intended due date to receive full credit and necessary feedback. Students will have the opportunity to turn in practice and formative assessments up to 2 school days late to receive partial credit.

- **Full Credit**: Students *might* receive full credit if the practice or formative assessment is turned in on the due date.
- **Partial Credit**: Students will receive partial credit if the practice or formative assessment is turned in up to two school days after the due date.
- **Zero Credit**: practice or formative assessment can be turned in past the two days to remain eligible for reassessment; however, no credit will be given.

Assessment Policy:

Assessments are used to measure student learning of essential learning standards within a unit of instruction.

Cumulative Assessments (Ex. Projects, Essays, Presentations, Semester Exams): These end of unit assessments are final products of learning in which students have had several opportunities to make adjustments based on feedback. Retakes are not provided for these types of end of unit assessments. ***Not eligible for retake**

Summative Assessments (Ex. Test): This end of unit assessment uses various types of questions that students have studied but not previously seen. Students are eligible to reassess if the following criteria are met: practice and formative assignments for the unit have been completed and turned in prior to the summative assessment, student meets with their teacher to schedule a reassessment, and demonstrates relearning within 2 weeks of receiving the original assessment. The reassessment grade will replace the original summative grade, regardless if the new grade is lower than the original assessment. ***Eligible for retake**

Expectations & Classroom Conduct:

Students are expected to come to class on time and prepared with:

- Calculator
- Pens/Pencils
- Note packets (distributed at the beginning of each chapter)
- Questions

Tardiness will be tracked in Infinite Campus (IC), and the following steps will be taken for each occurrence:

- 1st Tardy: Verbal warning
- 2nd Tardy: 10-minute detention with the teacher (must be served within 2 days) and parent contact; administration will be notified through Educlimber.
- 3rd Tardy: Teacher will submit an IC office referral. Administration will meet with the student, assign an after-school detention, and contact the parent.
- 4th +: The teacher will submit an office referral in Infinite Campus (IC), and administration will determine appropriate consequences at their discretion.

Students are expected to come to class engaged and respectful of the learning environment of their fellow classmates.

Learning Resources

Bring the following to class everyday…

Textbook
Notebook for homework
Binder for lesson handouts
Graphing Calculator – a TI-84 is strongly recommended

Primary Textbook:

- Larson, Ron and Battaglia, Paul. *Calculus for AP.* Cengage Learning, 2017

Additional Resources:

- Finney, Ross L., Demana, Franklin D., Waits, Bert K., and Kennedy, Daniel. *Calculus – Graphical, Numerical, Algebraic.* 5th ed., 2016.
- Goldstein, Benjamin. *Taylor Polynomials and Infinite Series,* Version 1.4, 2013.
- Curriculum Modules and Special Focus Materials from the College Board.

Course Outline

Please see our Google Classroom and the Course Google Calendar for a detailed scope and sequence of topics, practice details and due dates for practice, and dates of chapter tests and semester exams.

Chapter	Topics Covered
1 - Limits and Their Properties (Review Material)	● Finding Limits Graphically, Numerically, and Analytically ● Continuity and 1-sided Limits ● Infinite Limits and Limits at Infinity
2 – Differentiation (Review Material	● Tangent Lines and Rates of Change ● Basic Differentiation and Differentiation Rules (product, quotient, chain) ● Implicit Differentiation ● Derivatives of Inverse Functions ● Related Rates
3 - Applications of Differentiation (Review Material)	● Extrema on an Interval ● Rolle's Theorem and the Mean Value Theorem ● Increasing and Decreasing Functions and the First Derivative Test ● Concavity and the Second Derivative Test ● Curve Sketching ● Optimization

4 - Integration (Review Material)	• Antiderivatives and Indefinite Integration • Area, Riemann Sums, and Definite Integrals • The Fundamental Theorem of Calculus • Integration by Substitution
5 - Differential Equations (Review and *New Material*)	• Slope Fields and *Euler's Method* • Growth and Decay • Separation of Variables • *The Logistic Equation*
6 - Applications of Integration (Review and *New Material*)	• Area of a Region Between Two Curves • Volume: Disk and Washer Methods • *Arc Length*
7 - Integration Techniques, L'Hopital's Rule, and Improper Integrals (Review and *New Material*)	• Basic Integration Rules • *Integration by Parts* • *Partial Fractions* • Indeterminate Forms and L'Hospital's Rule • *Improper Integrals*
8 - Infinite Series (*New Material*)	• *Sequences, Series, and Convergence* • *The Integral Test and p-Series* • *Comparisons of Series* • *Alternating Series* • *The Ratio and Root Tests* • *Taylor Polynomials and Approximations* • *Power Series and Representations of Functions by Power Series* • *Taylor and Maclaurin Series*
9 – Parametric Equations, Polar Coordinates, and Vectors	• *Plane Curves and Parametric Equations* • *Parametric Equations and Calculus* • *Polar Coordinates and Polar Graphs* • *Area and Arc Length in Polar Coordinates* • *Vectors in the Plane* • *Velocity and Acceleration (vectors)*

MHS Academic Honesty

The Mukwonago Area School District emphasizes the importance of academic honesty and integrity as essential to education. Students are expected to complete and represent their work truthfully and are held accountable for academic misconduct, including cheating, plagiarism, and misuse of artificial intelligence. Teachers review the academic honesty policy at the start of each course. Consequences for dishonesty vary by offense: the ***first offense*** results in a zero on the assessment, parent contact, administrative review, and permanent ineligibility for National Honor Society; the ***second offense*** leads to another zero, a parent meeting with administration, and ineligibility for valedictorian or salutatorian honors; a ***third offense*** results in withdrawal from the course with a failing grade or audit status, and loss of honors pass privileges.

UWGB Academic Integrity

As stated from the UWS 14.01 Statement of principles, “The Board of Regents, administrators, faculty, academic staff and students of the University of Wisconsin System believe that academic honesty and integrity are fundamental to the mission of higher education and of the University of Wisconsin System. The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards must be confronted and must accept the consequences of their actions.” The entirety of the Student Academic Disciplinary Procedures can be located at https://docs.legis.wisconsin.gov/code/admin_code/uws/14

These procedures state that if there is any academic dishonesty of your academic work, there are consequences that can become part of your permanent college record.

UWGB Drop, Withdrawal, and Extended Absences Policies*

This course follows the UW-Green Bay policies for drops and withdrawals. Information can be found at https://www.uwgb.edu/bursar/refunds/refund-and-drop-schedule/ and https://www.uwgb.edu/bursar/term-deadline-calendar/

For information on drops and withdrawals, please refer to the UW-Green Bay folder provided to you.

*By registering, you accept responsibility for compliance with UW-Green Bay rules, regulations, and policies (**www.uwgb.edu/policies**). CCIHS courses longer than 14 weeks or longer follow the 14 week course policies. Once 14 calendar days have passed from the course start date, courses cannot be dropped without academic/fee penalties; for courses shorter than 14 weeks in duration, students have 7 calendar days from the course start date to drop a course without academic/fee penalties.*

Course grade(s) are final and will become part of my permanent college record. Enrollment in a CCIHS course does not guarantee admission to any college, including UW-Green Bay. By registering for this course you will be responsible for paying the high school for all tuition/fees owed for this course enrollment

For additional information and resources, visit the UW-Green Bay College Credit in High School website at https://www.uwgb.edu/ccihs/