Calculus with Analytic Geometry I
MTH 131-950, Fall 2021
Hybrid--Async online w/ face-to-face mtgs
Aurora Downtown Campus, DWNTN 315
W 6:30pm-8:10pm

Instructor Contact Information and Availability

Name and Title:	Dr. Steve Kifowit, Instructor of Mathematics (Pronouns: He/Him/His)
Waubonsee Email:	skifowit@waubonsee.edu
Office Location:	Sugar Grove Campus, BDE 249
Office Hours:	DWNTN 356 -- MW 1pm-2pm or by appt. BDE 249 -- TTh 11:30am-12:30pm or by appt. Zoom -- M 6:30pm-7:30pm or by appt.
Phone Number:	(630) 466-6698
Preferred Contact Method:	Email or in-person
Response Time:	During weekdays, please allow for up to 24 hours for email response.

Course Description

This first course in calculus presents analytic geometry and the calculus of algebraic and transcendental functions including the study of limits, derivatives, differentials, and an introduction to integration. The techniques of calculus will be used to analyze functions and their graphs, solve real-world applications, develop computational and numerical methods, and analyze the relationship between differentiation and integration using the Fundamental Theorem of Calculus.

Prerequisite(s)

C or better in MTH 111 and 112; or C or better in MTH 129 (Precalculus I) and MTH 130 (Precalculus II); or C or better in MTH 130 and required placement score; or placement by appropriate measures.

Illinois Articulation Initiative (IAI) Codes

M1 900-1, MTH 901

Course Materials

Textbook

Strang & Herman (2016). *Calculus--Volume 1*. OpenStax, ISBN: 978-1-938168-02-4

(A print copy of the textbook is not required for the class, but you must have access to the ebook, which is freely available online at https://openstax.org/details/books/calculus-volume-1*.)*

Class Materials and Resources

The TI-83/84 Graphing Calculator is required for the course.

Important Class Notes

Recommended Corequisite: None

Course Delivery Mode: Hybrid--Asynchronous online with Wednesday face-to-face meetings

Credit Hours: 4.0

Course Objectives

Throughout this course, the student will learn to:

1. state and use the epsilon-delta definition of the limit;
2. apply the concept of continuity, including the Intermediate Value Theorem;
3. use the definition of the derivative and interpret the derivative as both an instantaneous rate of change and as the slope of the tangent line to a function at a point;
4. differentiate functions using the rules for differentiation: power, product, quotient, and chain rules;
5. differentiate exponential, logarithmic, and trigonometric functions;
6. locate extreme values, points of inflection, and asymptotes of graphs of functions;
7. find and apply higher-order derivatives and understand how they relate to the graph of a function;
8. solve applied optimization problems;
9. use implicit differentiation and solve related rates problems;
10. apply Newton's Method;
11. apply Rolle's Theorem and the Mean Value Theorem; and
12. state and use the Fundamental Theorem of Calculus.

Student Learning Outcomes

Course Learning Outcomes

Upon successful completion of this course, the student will be able to:

1. apply techniques of calculus to analyze functions and their graphs;
2. solve real-world problems using differential calculus;

3. apply the Fundamental Theorem of Calculus to analyze the relationship between differentiation and integration; and
4. attain computational facility in integral calculus.

College Learning Outcomes

This course contributes to the following college learning outcomes:

☒ Critical Thinking
Examine information in order to propose or develop solutions or construct arguments.

☐ Communication
Use clear language to communicate meaning appropriate to various contexts and audiences.

☒ Quantitative Literacy
Make judgments or draw appropriate conclusions based on the quantitative analysis of data.

☐ Global Awareness
Describe the interconnectedness of issues, trends or systems using diverse perspectives.

☐ Information Literacy
Use technology to ethically research, evaluate or create information.

Methods of Evaluation of Student Learning, Grading Criteria, and Scale

Your performance in this course will be evaluated based on the following components:

Grading Criteria

Total points: 500

Grading Components	Score	Quantity	Subtotal	Percent
Tests	100	3	300 points	60%
Quizzes and Homework	10	10	100 points	20%
Comprehensive Final Exam	100	1	100 points	20%

Grading Scale

A ≥ 89.50% B ≥ 79.50% C ≥ 69.50% D ≥ 59.50% F < 59.50%

You can estimate your current grade at any time during the semester by computing the following percentage: 100% * (Total points accumulated) / (Total points possible). Please feel free to discuss your grade at any time during the semester. Throughout the semester, current grades will be available in our Canvas course shell.

Attendance, late work, and make-up policy

Regular class attendance is an essential component of successful learning. Students are responsible for prompt attendance and participation in all class meetings. If you miss class, you will not be allowed to make up any tests, quizzes, or assignments that you may have missed (**but you may reschedule a test or quiz, or submit an assignment, in advance of a missed class period**). All material covered in class is the student's responsibility.

Description and Details of Assignments

Independent Coursework

This semester, you will do most of your learning outside of the classroom. Our face-to-face class meetings on Wednesdays will be reserved for lecture recaps, question & answer, example problems, and assessments. To be successful in this course, you must be prepared for our class meetings. Lecture resources and a suggested pace for your independent work will be posted at the beginning of each week. Please keep up with the pace of the course and take advantage of office hours when necessary.

Homework

Suggested homework problems from the online textbook will be assigned daily and posted to the class website. Most of these will not be collected for grading, but they should be considered mandatory. Five times during the semester (see course schedule), a subset of ten (or fewer) suggested problems will be announced for submission on the following Wednesday. These assignments will be posted on the class website. Each collected homework assignment is worth a possible 10 points. At the end of the semester, a combination of only your top ten (10) homework assignments and quizzes will count toward your overall grade.

Quizzes

Be prepared for a10-point, in-class quiz on Wednesdays, according to the course schedule. No make-up quizzes will be given (unless scheduled prior to the quiz). Quizzes may have take-home portions. At the end of the semester, a combination of only your top ten (10) homework assignments and quizzes will count toward your overall grade.

Tests

Test problems will be similar to class examples, textbook problems, and quiz problems. In addition to computational problems, tests may include multiple choice, true/false, short answer, and/or writing problems. You must show all work (showing how you got your answer) on all tests to receive full credit. **You must work individually on all tests.** No make-up tests will be given (unless scheduled prior to the test). At the end of the semester, your lowest test score will be replaced by your final exam score (if this helps you).

Final Exam

The final exam is comprehensive and will be worth 100 points (20%) toward your final grade. The final exam is scheduled for our last class period.

Calculators

The TI-83/84 graphing calculator is required for this course. There are graphing calculator emulators available for smart phones and tablets--you may you these during class periods, but not during tests. If you would like to use a graphing calculator other than the TI-83/84, please discuss your options with your instructor.

Phones/Tablets/Laptops

Electronic devices may be used for taking notes and computing during lectures, but they may not be used on in-class tests. These devices must be silenced and put away during tests. Students in special circumstances who require their phones to be readily available must discuss their situations with the instructor.

Institutional Policy

Withdrawal

Waubonsee Community College reserves the right to administratively withdraw students who are not actively attending. Students may withdraw themselves from this course until the date noted on the Tuition Refunds page.

*** Please see the Student Handbook for other course policies and procedures.

Institutional Statements

Academic Integrity

Waubonsee Community College believes that all members of the community (students, faculty, staff, and administrators) have a responsibility to participate in learning with honesty, respect, and integrity. We must commit to engage in learning both in and out of the classroom, value each member in our learning community, demonstrate original thought, and help foster ethical, open, safe learning environments for all. For more information, please see the Waubonsee Community College Plagiarism Statement section in the Student Handbook.

Accessibility and Disability Statement

Accessibility is a value of our institution. We are committed to creating environments that are welcoming and that support all students' learning. If you experience barriers to your learning in this course please notify the instructor as soon as possible to discuss options. Students who experience barriers due to disability may contact the Access Center for Disability Resources to begin this conversation or establish accommodations.

Plagiarism

Waubonsee firmly upholds sound principles of academic integrity and responsibility. Plagiarism and cheating are serious infractions of academic integrity, and, as such, are considered breaches of the Code of Student Conduct. If a student has violated this policy, I will report the infraction to the Dean for Student Success and Retention and the student may fail the assignment or the course, depending on the severity or the number of infractions.

Student Support Services and Resources

Waubonsee Community College is committed to your success, and has many free supports, services, and resources available to you. Please visit the Waubonsee Cares page for links to basic needs (food, shelter, safety, etc.) support and resources both on campus and in the community. Please see the Student Experience page for more information and to get connected with Academic Support, Career Development, Counseling and Advising, Disability Resources, Student Life, Student Services, Technical Assistance Center, the Veterans Program, and many more! If you're not sure what type of assistance you need, please talk to me and I will help get you connected.

Course Schedule

Week (Date)	Sections	Topics & Assignments
Week 1 Aug 23-Aug 29	Course Information, Review, Section 2.2	Intro to limits (Quiz on 8/25)
Week 2 Aug 30-Sep 5	Sections 2.2 & 2.3	Limits and limit laws (Quiz on 9/1)
Week 3 Sep 6-Sep 12	Sections 2.4 & 2.5	Continuity, Formal definition of limit (HW assigned 9/8)
Week 4 Sep 13-Sep 19	Sections 3.1 & 3.2, **Test 1 on Wednesday, Sep 15.**	Derivatives, Test 1 covers sections 2.2-3.1
Week 5 Sep 20-Sep 26	Sections 3.2, 3.3, & 3.4	Basic differentiation rules, Rates of change,. (HW assigned 9/22)
Week 6 Sep 27-Oct 3	Sections 3.5, 3.6, & 3.8	Derivatives of trig functions, Chain rule, Implicit differentiation (Quiz on 9/29)
Week 7 Oct 4-Oct 10	Sections 3.7, 3.8, & 3.9	Derivatives of inverse, exponential, and logarithmic functions (HW assigned 10/6)
Week 8 Oct 11-Oct 17	Catch up/Review, **Test 2 on Wednesday, Oct 13.**	Test 2 covers sections 3.1-3.9.
Week 9 Oct 18-Oct 24	Sections 4.1, 4.2, & 4.3	Related rates, Linearizations, Extreme values (Quiz on 10/20)
Week 10 Oct 25-Oct 31	Sections 4.4, 4.5, & 4.6	Mean Value Theorem, 1st & 2nd derivative tests, Limits at infinity (HW assigned 10/27)
Week 11 Nov 1-Nov 7	Sections 4.7, 4.8, & 4.9	Optimization, L'Hopital's rule, Newton's method (Quiz on 11/3)

Week (Date)	Sections	Topics & Assignments
Week 12 Nov 8-Nov 14	Section 4.10, **Test 3 on Wednesday, Nov 10.**	Antiderivatives, Test 3 covers sections 4.1-4.9.
Week 13 Nov 15-Nov 21	Sections 5.1, 5.2, & 5.3	Area, Definite integrals, Fundamental Theorem of Calculus (Quiz on 11/17)
Fall Break Nov 22-Nov 28	Thanksgiving break	No classes
Week 14 Nov 29-Dec 5	Sections 5.3, 5.4, & 5.5	Integration formulas, Substitution (HW assigned 12/1)
Week 15 Dec 6-Dec 12	Sections 5.6 & 5.7	Integrals involving exponential, logarithmic, and inverse trig functions (Quiz on 12/8)
Week 16 Dec 13-Dec 15	Review, **Final Exam on Wednesday, Dec 15.**	Final exam is comprehensive with emphasis on course learning outcomes.

November 12 is the last day for students to withdraw themselves. Please check the current Waubonsee Academic Calendar for important dates.

Class Website

Course information, including tests, quizzes, answer keys and homework problems, can be found on the class website at http://stevekifowit.com/classes/m131.htm.

Grades, announcements, and Zoom meeting information will be posted in our Canvas course shell. Other course information will be available on the class website.

Change of Delivery Mode

In the event that we must discontinue our face-to-face class meetings, we will automatically transition to synchronous Zoom meetings at our scheduled days and times.