CALCULUS

Teacher Name: Teresa Tarter   Teacher E-mail: tgtarter@madisoncity.k12.al.us

Course Description:	Calculus is a beginning honors-level calculus course for those students who have completed precalculus. This course is an in-depth study of elementary functions, limits, and differential calculus. Some topics of integration are also introduced. This course is required for Advanced Placement (AP) Calculus AB and AP Calculus BC.
Course Objectives:	This course provides an introduction to differential and integral calculus. The primary aims of the course are to help students develop new problem solving and critical reasoning skills and to prepare them for further study in mathematics, the physical sciences, or engineering. By the end of the course, students should acquire skills needed to • compute limits by graphical, numerical, and analytical methods; • mechanically calculate derivatives of algebraic and trigonometric functions and combinations of functions; • use derivatives to sketch graphs and solve applied problems; and • evaluate definite and indefinite integrals. In addition to the specific skill-oriented objectives above, students should • have a better overall conceptual understanding of functions and their graphical, numerical, analytical, and verbal representations; • understand derivatives as rates of change; • understand definite integrals as accumulations of a rate of change and as Riemann sums; • understand the relationship between derivatives and integrals; • understand the difference between definite and indefinite integrals; • have improved skills at problem solving and critical thinking: at dissecting a complex problem, determining steps in its solution, finding the solution, and testing whether it is reasonable; and • be able to provide clear written explanations of the ideas behind key concepts from the course. Students should also gain an increased appreciation of mathematics as part of the language of science and as a study in itself.
Textbook:	<u>Calculus of a Single Variable</u>, 11th edition. Roland Larson and Bruce Edwards, Cengage Learning.
Classroom Expectations:	You are expected to conduct yourself in a respectful and productive manner. In addition to all the rules and expectations listed in the student handbook, I expect you to have a positive attitude, treat others with respect, practice self-discipline, and demonstrate responsibility. If these conditions are not met, you can expect one-on-one meetings with me, parent/instructor conferencing, and administrative action, if necessary. lunch. Failure to follow these procedures will result in a disciplinary referral to the office.

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Cell Phone Expectations:	ALL electronic devices are prohibited from use during the instructional day (from 8:12-3:28). This includes: cell phones, smart watches, earbuds/headphones/airpods, tablets, and personal computers (school issued laptops will be allowed). Discipline will be given to ANY student who uses an electronic device. If you bring your device to school, it MUST be placed in your bookbag. It cannot be on your person.
Tardy Policy:	Students who are late to ANY class, without a pass, will report to a tardy scanning station. You will input your identification number on the pin pad. A tardy slip will be printed for you to report to class. A parent email will be sent for every tardy. Discipline will be as follows: 3 total tardies will result in 1 day of ISS; 6 total tardies will result in 2 days of ISS; Progressive discipline to follow.
Grading Policy:	Grades are based on a 100-point scale. We have two types of grades: daily grades (30% of final grade) and tests (70% of final grade). The percentage-based grading scale is as follows: A (90-100), B (80-89), C (70-79), D (65-69), and F (below 65). Grades are a reflection of mastery of the standards. Make sure all absences are excused as class work can be made up and graded for excused absences only. Cheating/plagiarizing will be handled by the teacher at teacher discretion
Make-up Work Policy:	Make-up tests will only be given to a student who has an excused absence. The student must make arrangements with the teacher to take a make-up test. Tests may be taken before school on designated days by the teacher. Homework/Classwork: Students who are absent for excused reasons will be permitted to make up any missed work. It is the student's responsibility to get their work assignments (usually posted in Schoology) and complete the assignments according to a time frame determined by the teacher within two weeks of the date of the last absence. Grades of zero will be assigned for assignments missed because of unexcused absences.
Exam Exemption Policy:	Any student in grades 9-12 are eligible to earn an exam exemption for the 2025-2026 Exams for each class IF they have earned an 85% or higher as the final grade for that course. Any of the following will EXCLUDE a student from exempting for that class: • More than five EXCUSED absences • Any UNEXCUSED absence • In School Suspension (ISS) for 3 days or more • Out of School Suspension (OSS) • One or more days of Alternative School placement • Not participating in the state standardized assessment for their grade level (10th PreACT, 11th ACT with Writing, 12th WorkKeys, and AP exams) Attendance and full participation in reviews and assignments for the class leading up to the day of the final exam are required.

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Materials and Supplies Needed:	Students are encouraged to bring graphing calculators to each class. Several TI-84+ graphing calculators are provided for in-class use for those students not owning graphing calculators. Since the calculus AP exams require graphing calculators for some questions, this technology has been extensively incorporated into the curriculum. In-class tests will not require the use of a graphing calculator; however, students will often be allowed to use graphing calculators on certain parts of the exams. The instructor will be using a TI-84 graphing calculator and presentation software and therefore will provide assistance with the operation of TI-84 calculators. If a student chooses to use a calculator other than the TI-84, he/she is responsible for learning to operate that device .
Laptops:	Concerning laptop utilization: 1) Student laptops should not be hard-wired to the network or have print capabilities. 2) Use of discs, flash drives, jump drives, or other USB devices will not be allowed on Madison City computers. 3. Neither the teacher nor the school is responsible for broken, stolen, or lost laptops. 4. Laptops and other electronic devices will be used at the individual discretion of the teacher.
Accommodations:	Requests for accommodations for this course or any school event are welcomed from students and parents.

18 – WEEK PLAN *	
Week 1	Pre-Calculus Review: Inequalities, Absolute Value, Graphs, Linear Rates of Change, & Trig
Week 2	Continuation of Pre-Calculus Review Introduction to Limits: Informal evaluation & formal epsilon/delta definition
Week 3	Limits: Evaluating Limits Analytically, Continuity, 1-Sided Limits & Infinite Limits
Week 4	Differentiation: Definition of Derivative & Applying basic formulas to find derivatives
Week 5	Differentiation: Product Rule & Quotient Rule
Week 6	Differentiation: Chain Rule & Implicit Differentiation
Week 7	Applications of Differentiation: Related Rates & Extrema on an Interval
Week 8	Applications of Differentiation: Mean Value Theorem & 1st Derivative Test
Week 9	Applications of Differentiation: Concavity, Limits at Infinity, & Curve Sketching
Week 10	Applications of Differentiation: Optimization, Differentials, & Newton's Method
Week 11	Integration: Antiderivatives and Indefinite Integration
Week 12	Integration: Area, Riemann Sums, and Definite Integrals
Week 13	Integration: Definite Integrals & Fundamental Theorem of Calculus
Week 14	Integration: Integration by Substitution
Week 15	Integration: Estimation using Trapezoidal Rule Applications of Integration: Particles in Motion & Area Between Two Curves
Week 16	Transcendental Functions: Differentiation & Integration of Natural Log Functions
Week 17	Transcendental Functions: Inverse Functions, Differentiation & Integration of Exp. Functions
Week 18	Semester Exam Review

*This is a tentative plan and may change at the discretion of the teacher.