



CALCULUS A

Teacher Name: Mrs.Schutzbach

Teacher E-mail: schutzbach@madisoncity.k12.al.us

Course Description:

Calculus A is a beginning honors-level calculus course for those students who have completed Pre-Calculus. 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.

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.



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Concerning the use of cell phones and other electronic devices:

Devices should be on silent and kept in your purse, backpack, or pocket during class unless otherwise instructed. You may not place it on your desk. Parents, guardians, and other family members should call the front office in case of emergency.

If you violate this rule, you can expect the following consequences:

First offense – The phone or device will be placed in a phone chart at the front of the room. You may pick it up at the end of class.

Second offense – The phone or device will again be placed in a phone chart at the front of the room until the end of class and a parent/guardian will be notified.

Third offense – This is defiance and I will notify an administrator.

Grading Policy:

Major assessments will count 70 percent of your grade. Homework and classwork will account for 30 percent of your grade. Grades will be updated weekly in PowerSchools. Each grading period will consist of nine weeks.

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 during Patriot Path with prior arrangement from each teacher.** A student only has two chances (the next two Patriot Paths after the absence) to make up a test. All make-up tests will be administered in the designated classroom on the Patriot Path session roster.

Homework/Classwork: Students who are absent for **excused reasons** will be permitted to make up missed work. **It is the student's responsibility to get their work assignments the day upon return to school 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.

Textbook:

Calculus of a Single Variable, 11th edition. Ron Larson and Bruce Edwards, Cengage Learning.

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 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 machine.



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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 & 1 st 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.**



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Please sign below to acknowledge that you have received, read, and understood the syllabus.

Student name: _____

Student signature: _____

Parent/guardian name: _____

Parent/guardian signature: _____

Parent/guardian, please provide two ways for me to contact you (email address, phone numbers):

Parent/guardian Email:

Parent/Guardian Phone number:
