James Clemens High School
11306 County Line Road
Madison, AL 35756

Phone: 256-216-5313
Extension: 95143
Email: nhartfield@madisoncity.k12.al.us

Course Syllabus
BC Calculus Spring 2024
Instructor: Nancy Hartfield

Course Description:

Advanced Placement (AP) Calculus BC is a continuation of the Honors Calculus A course. The primary focus of the course is preparing students for the AP Calculus BC exam. Topics covered include transcendental functions, techniques of integration, applications of integration, and infinite series. Also, the material from Calculus A will be reviewed extensively in preparation for the BC exam. Students are required to take the AP Calculus BC exam. College credit at most universities may be earned for Calculus I and Calculus II by scoring a 3, 4, or 5 on the AP Calculus BC exam. Honors Calculus A should be taken in the fall of the school year that a student is taking AP Calculus BC.

Course Objectives:

This course continues the study of differential and integral calculus that was begun in Honors Calculus A. 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 be able to

- apply integration to several types of physical problems;
- differentiate, integrate, and solve problems with exponential, logarithmic, and inverse trigonometric functions;
- use separation of variables to solve simple differential equations and solve applied problems involving Newton's Law of Cooling;
- compute complicated integrals using a combination of substitutions, algebraic and trigonometric manipulation, partial fractions, and parts;
- recognize and compute improper integrals;
- compute volumes of solids using washer, shell, and general cross-section methods;
- analyze curves given parametrically;
- calculate area of a region bounded by a polar graph;
- apply convergence tests to a wide range of infinite series;
- approximate elementary functions using Taylor polynomials; and
- determine Taylor and Maclaurin series of a given function.

Students should also gain an increased appreciation of mathematics as part of the language of science and as a study in itself.

James Clemens High School
11306 County Line Road
Madison, AL 35756

Phone: 256-216-5313
Extension: 95143
Email: nhartfield@madisoncity.k12.al.us

Classroom Rules and Expectations:
- · Be respectful of all persons in the class at all times.
- · Be prepared for class each day when the bell rings– with materials, homework, etc.

Accommodations: Requests for accommodations for this course or any school event are welcomed from students and parents.

Concerning Laptop Utilization: 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.

Grading Policy:
Test grades will account for 70% of the 9-weeks grade, with the remaining 30% being determined by quiz/daily grades. The grading scale is as follows: A (90-100%), B (80-89), C (70-79), D (65-69), and F (below 65). Grades will reflect mastery of the standards. Make sure all absences are excused as class work can be made up and graded for excused absences only. The final exam counts for 20% of the final grade.

Make-Up Work Policy:
To be arranged by the student prior to the absence or on the first day back to class.

Course Materials:
Students are encouraged to bring graphing calculators to each class. Since the calculus AP exams require graphing calculators for some questions, this technology has been extensively incorporated into the curriculum. In-class tests will often have a calculator portion and a non-calculator portion. The instructor will be using a TI-84 and therefore will aid 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. If a student is using a TI version older than the 84, it is strongly recommended that you purchase an updated calculator.

Texts/Required Readings:
Calculus of a Single Variable, 11th edition. Larson and Edwards, Cengage.

AP Exams:
The AP Calculus exams are scheduled for 8:00 a.m. on Monday, May 13. The fee for an AP Exam is $98 and should have already been paid. If you have not paid the fee for the exam, please see Mrs. Hyche as soon as possible.

James Clemens High School
11306 County Line Road
Madison, AL 35756

Phone: 256-216-5313
Extension: 95143
Email: nhartfield@madisoncity.k12.al.us

Course Syllabus
BC Calculus Spring 2022
Instructor: Nancy Hartfield

18 - WEEK PLAN*	
WEEK 1	Review of first semester topics; Differential equations
WEEK 2	More Differential equations including Euler's method
WEEK 3	Accumulation, FTC 1 and FTC 2
WEEK 4	Applications of integration - particle motion, average value
WEEK 5	More applications; Area, Volume
WEEK 6	Volume; Arc Length; Improper Integrals
WEEK 7	More Volume; Series Introduction
WEEK 8	Series: Taylor series and Taylor polynomials
WEEK 9	Series: Convergence/Divergence
WEEK 10	Series: more on convergence/divergence; conclude unit
WEEK 11	Spring Break
WEEK 12	Parametric and Vector Valued Functions; Polar derivatives and Polar Area
WEEK 13	More on Parametric and Polar Functions
WEEK 14	AP Exam Review: In-depth Review of Selected AP Topics
WEEK 15	AP Exam Review: In-depth Review of Selected AP Topics
WEEK 16	AP Exam Review: In-depth Review of Selected AP Topics
WEEK 17	AP Exam Week; Post AP Exam Selected Topics
WEEK 18	Post AP Exam Selected Topics

* This syllabus serves as a guide for both the teacher and student; however, during the term it may become necessary to make additions, deletions or substitutions.