Name of Course: Calculus

Instructor: Mrs. Ellen Tolbert

Room: 151

Extra Help: Thursday 3:30- 4:30 p.m.
Please let me know during class if you are coming for help.

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Welcome to Caculus for the school term 2018-2019!
Please refer to the following information on course proceedings for the semester.

Booker T. Washington High School

Vision
The vision of Booker T. Washington High School is that we are:
Unified, Motivated, Educated and Connected… with Love.

Mission
The mission of Booker t. Washington High School is to develop technologically competent individuals who are: Equipped, Aspiring, Goal-Oriented and Leaders

Motto
" Rising to Meet the Challenge!"

Mantra:
"The Power of One…Opportunities Never End!"

Classroom Motto:
"Do What You **Need** to Do, So that You Can…
Do What You **Want** to Do.

Course Description:

Course Description: **Calculus** is designed to give students an overview of Calculus topics such as limits and continuity, derivatives, anti-derivatives, integrals and differential equations. While this course covers many of the same concepts found in Advanced Placement Calculus, it is not bound by the pace and rigor necessary for success on the AP Calculus exam. Therefore, this course best suits the student who is mathematically ready to learn Calculus but does not want the "stress" of AP Calculus. Students have the option of taking the AP Calculus exam after completing this course.

Course Topics will include:

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Pre-Requisites Skills Review

1. Functions, Limits, Continuity

2. Derivatives

3. Applications of Derivatives

4. Integration

5. Applications of Definite Integrals

6. Transcendental Functions

7. Integration Techniques

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Textbook:
Contemporary Calculus I and II by Dale Hoffman. Available for free as a PDF to be downloaded to the student's iPad at **http://scidiv.bellevuecollege.edu/dh/Calculus_all/Calculus_all.html**

Required Materials/ Supplies While in Class:

Several pencils
Graphing calculator (TI-84 or TI-Nspire) ·
A desire to learn ·
3-ring binder with all items arranged chronologically
white college-ruled binder paper ·
graph paper ·
iPad with Calculus textbook

The instructor reserves the right to modify this syllabus for the needs of the class.

Course Outline

(*Note: Only Chapters 1-5 are required; however, if time permits, students will be taken further into Chapters 6-8 (Calculus II)*)

Chapter 1 – Functions, Graphs, Limits and Continuity
1.0 Slopes & Velocities •
1.1 Limit of a Function • 1.2 Limit Properties • 1.3 Continuous Functions • 1.4 Formal Definition of Limit

Chapter 2 – The Derivative
• 2.0 Slope of a Tangent Line • 2.1 Definition of Derivative • 2.2 Differentiation Formulas • 2.3 More Differentiation Patterns • 2.4 Chain Rule (!!!) • 2.5 Using the Chain Rule • 2.6 Related Rates • 2.7 Newton's Method • 2.8 Linear Approximation • 2.9 Implicit Differentiation

Chapter 3 – Derivatives and Graphs
• 3.1 Introduction to Maximums & Minimums • 3.2 Mean Value Theorem • 3.3 f' and the Shape of f • 3.4 f" and the Shape of f • 3.5 Applied Maximums & Minimums • 3.6 Asymptotes • 3.7 L'Hospital's Rule

Chapter 4 -- The Integral
•4.0 Introduction to Integrals • 4.1 Sigma Notation & Riemann Sums • 4.2 The Definite Integral • 4.3 Properties of the Definite Integral • 4.4 Areas, Integrals and Antiderivatives • 4.5 The Fundamental Theorem of Calculus • 4.6 Finding Antiderivatives • 4.7 First Applications of Definite Integrals • 4.8 Using Tables to Find Antiderivatives • 4.9 Approximating Definite Integrals

Chapter 5 -- Applications of Definite Integrals
• 5.0 Introduction to Applications • 5.1 Volumes • 5.2 Arc Lengths & Surface Areas • 5.3 More Work • 5.4 Moments & Centers of Mass • 5.5 Additional Applications

Chapter 6 – Introduction to Differential Equations
• 6.0 Introduction to Differential Equations • 6.1 Differential Equation y'=f(x) • 6.2 Separable Differential Equations • 6.3 Exponential Growth, Decay & Cooling

Chapter 7 -- Inverse Trigonometric Functions
• 7.0 Introduction to Transcendental Functions • 7.1 Inverse Functions • 7,2 Inverse Trigonometric Functions • 7.3 Calculus with Inverse Trigonometric Functions

Chapter 8 -- Improper Integrals and Integration Techniques
• 8.0 Introduction Improper Integrals & Integration Techniques • 8.1 Improper Integrals • 8.2 Integration Review • 8.3 Integration by Parts • 8.4 Partial Fraction Decomposition • 8.5 Trigonometric Substitution • 8.6 Trigonometric Integrals

Tests & Quizzes	**40%**
In-Class Assignments/Projects	**25**
Quarterly Exam o This Exam will only take place at the end of **QUARTER 1** and **QUARTER 3**	**10%**

Notebook
    o Notes, reflections, revisions, etc
    o **Table of Contents sheet must be fully updated and Grading Rubric must accompany the table of contents.**
	15%

Homework
    o *Assignments that must be completed outside of class which will reinforce content knowledge and skills; most often completed in* <u>*notebooks*</u>.
    o Ex: Assignments from the text
    o MCAS Review Assignments
	10%

The Alabama CCRS Objectives will be measured as follows:

- Tests
- Quizzes
- 10-Minute Checks (mini 10-minute quizzes)
- Homework
- In-Class Assignments
- Oral Presentations , and Reports
- Writing in Mathematics
- Independent Projects
- Collaborative Projects
- Performance Tasks
- Observations
- Interviews
- Standardized Tests
- Note-taking and Notebook Organization
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<u>Note-Taking</u>: **<u>Is required each day.</u>** Please have pencil, paper and necessary supplies daily.