



**Course Title** CALCULUS CAL41G

**Course Description:** The division initiated one credit calculus course is concerned with developing the students' understanding of the concepts of Calculus and providing experience with its methods and applications.

**Teacher:** Mr. Hartle

**General Learning Outcomes:**

1. Students should be able to work with functions represented in a variety of ways: graphical, numerical, analytical, or verbal. They should understand the connections among representations.
2. Students should understand the meaning of the derivative in terms of a rate of change and local linear approximation and should be able to use derivatives to solve a variety of problems.
3. Students should understand the meaning of the definite integral.
4. Students should be able to communicate mathematics both orally and in well-written sentences and should be able to explain solutions.
5. Students should be able to model a written description of a physical situation with a function, a differential equation, or an integral.
6. Students should be able to use technology to help solve problems, experiment, interpret results, and verify conclusions.
7. Students should be able to determine the reasonableness of solutions.

Students should develop an appreciation of calculus as an important body of knowledge.

**Course Evaluation:**

Evaluation Format:

Term Tests	50%
Homework	10%
Term Quizzes	10%
Exam	30%

All students must write the final exam.



### Course Final Standing:

The final mark for term work, within the respective categories, (tests, assignments, labs, and projects) will be cumulative.

## Unit Descriptions

### Unit Title:            PREREQUISITE TOPICS

**Timeline:**            15 lessons

#### **Specific Learning Outcomes:**

Lines  
Functions and Graphs  
Exponential Functions  
Functions and Logarithms  
Trig Functions

#### **Assessment and Evaluation:**

2 Quizzes	10
Unit Test	60

#### **Resources:**

Text: Calculus: Graphical, Numerical, Algebraic  
Graphing Calculator

### Unit Title:            LIMITS

**Timeline:**            15 lessons

#### **Specific Learning Outcomes:**

Rates of Change and Limits  
Limits Involving Infinity  
Continuity  
Rates of Change and Tangent Lines

#### **Assessment and Evaluation:**

2 Quizzes	10
Unit Test	60

#### **Resources:**

Text: Calculus: Graphical, Numerical, Algebraic Graphing Calculator



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**Unit Title:            DIFFERENTIATION**

**Timeline:**                    30 lessons

**Specific Learning Outcomes:**

Derivative of a Function  
Differentiability  
Rules for Differentiation  
Velocity and other Rates of Change  
Derivatives of Trig Functions  
Chain Rule  
Implicit Differentiation  
Derivatives of Inverse Trig Functions  
Derivatives of Exponential Functions

**Assessment and Evaluation:**

3 Quizzes	10
1 Unit Test	60

**Resources:**

Text: Calculus: Graphical, Numerical, Algebraic  
Graphing Calculator

**Unit Title:            APPLICATIONS**

**Timeline:**                    30 lessons

**Specific Learning Outcomes:**

Extreme Values of Functions  
Mean Value Theorem  
Connecting 1<sup>st</sup> and 2<sup>nd</sup> Derivatives with the Graph of the Function  
Modeling and Optimization  
Linearization  
Related Rates Applications

**Assessment and Evaluation:**

2 Quizzes	10
1 Unit Test	60

**Resources:**

Text: Calculus: Graphical, Numerical, Algebraic Graphing Calculator