**AP calculus AB**

# **Teacher : Mme Marsella**

###### Course Outline – 2018/19

Welcome,

Calculus represents one of the pinnacles of human achievement and will provide you with a framework for putting together much of the math you have learned into a coherent whole. Calculus is challenging and the ideas we will be exploring are new and will make you think. I hope as you become skilled in the various techniques you will learn to appreciate Calculus as a system for observing, studying and describing change.

We will be exploring all concepts graphically, numerically and analytically. This should give you a broad insight into the main ideas of Calculus. You have finished the initial Math 12 component successfully and now have the necessary background to continue.

This is a college level course for which you can earn college credit or advance placement. It also requires a strong work ethic and commitment. Having said this there are many advantages in taking this course other than the college credit. You will learn to work at a college level and gain valuable problem-solving skills. You will also develop study habits that will help you in taking more rigorous courses. In this course, all work needs to be justified in a rigorous way. Unsupported answers don’t get any marks.

I am committing my time and energy in such a way as to make the course as rich and attainable as possible for each student in the class. You must come to class prepared for the next lesson; I will be moving at a steady pace so if you feel you are falling behind or that you are having trouble understanding a concept, please make sure you come to see me before the next lesson. I am available almost every day at lunch and after school.

**Course Content and approx. Timeline:**

**Limits and Continuity** (Chapter 2) **:**  Nov 30th – Dec 14th

Rates of Change and Limits

Continuity

Rates of Change and Tangent Lines

**Derivatives** (chapter 3) **:**  Dec 17th – Jan 28th.

Derivative of a Function

Differentiability

Rules of Differentiation

Velocity and Other Rates of Change

Derivatives of Trig Functions

Chain Rule

Implicit Differentiation

Derivatives of Inverse Trig Functions

Derivatives of Exponential and Logarithmic Functions

**Applications of Derivatives** (Chapter 4 & 8.2) **:** Jan 29th – Feb 12th.

Extreme Values of Functions

Mean Value Theorem

Connecting f’ and f’’ with the graph of f

Modeling and Optimization

Linearization and Newton’s Method

Related Rates

L’Hopital’s Rule

MIDTERM review and exam : Feb 13th – Feb 18th.

**The Definite Integral** (Chapter 5) **:** Feb 19th – March 5th.

Estimating with Finite Sums

Definite Integrals

Definite Integrals and Anti-Derivatives

Methods of Integration

Fundamental Theorem of Calculus

Trapezoidal Rule

**Differential Equations** (Chapter 6) **:** March 6th – April 1st.

Slope Fields

Differential Equations

Exponential Growth and Decay

**Applications of the Definite Integral** (Chapter 7) **:**  April 2nd – April 12th.

The Integral as Net Change

Areas and Volumes

REVIEW for Exam

AP CALCULUS AB FINAL EXAM MAY 14TH,2018 @8:00 AM

The exam is 3 hours and 15 minutes long. It has 2 sections.

**Section I**: 45 Multiple choice questions – 1h45min – 50% of the Final Exam score.

Part A: 30 questions – 60 minutes – calculator not permitted.

Part B: 15 questions – 45 minutes – Graphing calculator required.

**Section II**: 6 Long answer questions – 1h30min – 50% of the Final Exam score.

Part A: 2 problems – 30 minutes – graphing calculator required.

Part B: 4 problems – 60 minutes – Calculator not permitted.

RESOURCES:

TEXTBOOK: *Calculus*: Graphical, Numerical, Algebraic: Demana, Waits and Kennedy

*Barron’s AP Calculus*

*AP Problem Set and AP Exams*

##### material Calculator (graphic e.g TI83 - every day)

We will use the graphic calculator extensively and you need to become proficient in it’s use ; at the same time you must be able to prove an analyze concepts analytically. Tests will follow the AP exam format most of the time and will be a mixture of calculator and no-calculator sections to help you prepare for the exam.

##### Evaluation

Quizzes, Assignments and projects 20%

Tests 65% Midterm exam 15%

The marks will be accessible online on a regular basis.

You will be given an access code to access the website.

On my homework webpage ( <http://fleurmarsella.weebly.com/> ) you will find what we are covering each day (under “timeline”) and all the documents and lessons that you can print from home (under “notes and documents”).

### Expectations for AP calculus:

* Show **respect** to your classmates, your teacher and the material.
* Be in class **on time** with ALL your material, hence your calculator.
* **Homework has to be completed every day**. **Lessons need to be learned every day.** Asking questions is encouraged at all times, making the teacher repeat until it makes sense is encouraged, but making the teacher repeat things because you haven’t read/learned your lesson or done your homework makes the whole group waste their time.
* Work missed during absence has to be done as soon as possible. You can look on the homework website to find out what you missed or email me directly. You are responsible for **making arrangements for missed quizzes and tests** **as soon as possible**.
* If a student is **absent for a test**, he/she needs to let me know in advance if possible. He/she needs to **bring a note from a guardian** or doctor upon return to avoid getting a 0 on that test.
* **Cell phones** can’t replace your calculator and shouldn’t be seen in class.   
  If a cell phone is used/seen during a test or an exam, the student won’t be able to keep working on the test or exam.