IB MATH STUDIES (STANDARD LEVEL)
Mercyhurst Preparatory School
2015 - 2016

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Course Description

This course is a covers a lot of mathematics. We will go through very varied mathematical topics such as **statistics**, differential calculus, set theory and geometry. The goal is to give you an idea of the big themes and ideas in various branches of mathematics and how they vary in feel and in process.
The following are the units of our class. They are create according to the IB syllabus.

Statistics

Unit 1. Descriptive Statistics
Unit 2. Bivariate Data Analysis (Linear and nonlinear Regression, Goodness of Fit tests, Chi Squared Hypothesis test for independence)

Probability, Set Theory, Logic and Further Statistical Topics.

Unit 3. Probability (Classic Probability lessons and problems: sets, conditional probability, solving complex probability by using tree diagrams, counting problems)
Unit 4. Additional topics Statistical Theory (Random variables, Continuous and Discrete Distributions, Normal Random variable, Binomial Random Variable, Mean and standard deviation of Probability distributions)

Review of Material from Last Year and Miscellaneous Algebra and Trig

Unit 5. Set theory and logic Family of Common functions and their properties. Equations of lines and parabolas. Trigonometric Functions with their graphs and properties. Sequences and Series. Applications of Sequences and series. Applications of other mathematical models.

Differential Calculus

Unit 6. Limits (evaluating limits with a table, evaluating limits by using a set of rules, what does it mean for a function to be continuous?)
Unit 7. Derivatives (Limit definition of a derivative, derivatives of power functions, trigonometric functions, exponential and logarithmic functions, derivative of a sum and difference, second derivative, what does it mean for a function to be differentiable?)
Unit 8. Applications of Derivatives (Relationship between a function and its derivative function, First derivative test, tangent and normal lines, optimization problems)

Practice IB Exams - depending on how much time we have left at this point two or three FULL LENGTH AND RECENT practice IB exams will be completed in class.

Homework: Each lesson will have a homework assignment. Homework will either come from the textbook or be given to you as a handout. You will get some time at the end of each class to work on your homework. All homeworks will be checked on the spot in class. Sometimes I will collect assignments.

Tests: At the end of each topic we will have a test. We may have a mid-unit quiz, if the unit is particularly long. I will review briefly for the test. You can prepare for the tests by looking over the homeworks and examples in the notes. I will not let you use any cheat sheets for the test except the one provided to you for the IB EXAM. You should use a calculator for the test. (TI graphing calculator) Missed tests need to be made up in a timely manner.

Internal Assessment
Along with covering the material, you will also work on your data collection and analysis project, known as the **IB Internal Assessment.** The project will take you a few months to complete (From End of October to End of March) and has to meet the IB criteria. We will spend a lot of time looking over the criteria for IA and read past projects. We will also spend some time exploring and choosing topics for research. The project is worth 20% of your IB Grade and will be worth about as much as two exam grades for your class grade.

Final Exam
- Exempt from final exam: Students taking IB test and Seniors with a yearlong A
- Not Exempt from final exam: Seniors with grade below A and non-Seniors not taking IB test

Grades
You and your parents can view your grades online live, right after I enter them. If you notice a mistake, see me right away. There are three terms in a school year and at the end of the year you will take a cumulative final exam. Your final grade will be determined by using the following formula:

Final Grade = (2*T1 + 2*T2 + 2*T3 + F) / 7

Final Grade = (T1 + T2 + T3) / 3 (If you are not taking the final)

The letter grade break down at MPS is as follows:

	General/College Prep	Honors Course
A = 93 - 100%	4.0	5.0
B+ = 90 - 92%	3.5	4.5
B = 85 - 89%	3.0	4.0
C+ = 82 - 84%	2.5	3.5
C = 75 - 81%	2.0	3.0
D = 70 - 74%	1.0	1.0
F = 69 - Below	0.0	0.0

The IB Math Studies Exam is proctored on two days: Paper 1 on **Tuesday May 10, 2016 (afternoon)** and Paper 2 on **Wednesday May 11, 2016 (morning).** Each paper (exam) lasts for 90 minutes. You are allowed to use a calculator for each. The Internal Assessment is completed over the course of a few months and is mailed to IB at the end of March, 2016. I will tell you more about the two exams and the project as the year progresses.

Extra Help and Tutoring If you need extra help with the material, you can come see me individually for special help. I will be in my classroom after school every day from 3:10 to 4:00.
You could also tutor Algebra students either in my room or in Math Lab (Room 120)

A note on Classroom Behavior
I expect you to treat your teacher and your fellow students with respect. I will not tolerate rude classroom disruptions. Let us create a safe, friendly environment conductive to learning, personal growth and getting to know one another. I want this class to be a positive experience for **everyone**.

I care very much about how you feel and how you learn in this class. Please feel free to talk to me or to write me if you want to discuss something.

Let's have a great year!