

## Mr. Braza's IB Math A&A SL Year 1 Syllabus

### What is IB Math A&A?

This is the first part of a two-year IB course designed for students who wish to study mathematics in-depth, integrating concepts from Algebra, Geometry, & Precalculus with a more formal approach to mathematical rigor. It will appeal to students who are interested in exploring real and abstract applications of mathematical concepts.

### Instructor, Classroom, Email, Phone Extension

Mr. Kevin Braza, Room 24, [kbraza@villanovaprep.org](mailto:kbraza@villanovaprep.org), x224

### Office Hours

Every weekday after class from 3:00 - 3:45pm in Room 24.

Tuesdays in evening study hall from 7:00 – 9:00pm.

### Masking Policy

As of writing this syllabus (effective August 18, 2022), Ventura County's indoor mask order has been lifted in alignment with the state (effective February 16, 2022). We, the instructors, have been permitted to enforce mask requirements or recommendations for our classrooms at our own discretion. Ventura County & Villanova Preparatory School policies may change during the year in response to CDC guidelines. We ask for your compassion and willingness to contribute to a safer in-person learning environment for your classmates.

### Class Rules and Procedures

- Be on time to class and begin assessment at the start of class.
- Actively participate in class through classwork and class discussion.
- Be courteous to your classmates and be supportive of their efforts.
- Take risks with difficult or challenging problems on the board or given in assignments.
- Work with your peers to solve problems and check each other's work.
- Accept responsibility for your own success in the class.

### Composition of Grades

Participation 5%      Assignments 5%      Assessments 20%      Tests 50%      Final 20%

### Villanova Preparatory School Grading Scale

A 94-100 (4.0)	A- 90-93 (4.0)	B+ 87-89 (3.0)	B 83-86 (3.0)
B- 80-82 (3.0)	C+ 77-79 (2.0)	C 73-76 (2.0)	C- 70-72 (2.0)
D+ 67-69 (0)	D 63-66 (0)	D- 60-62 (0)	F Below 60 (0)

### Textbooks

#### *Mathematics Core Topics HL 1*

Author: Haese, Humphries, Sangwin, Vo  
Haese: 2019  
ISBN-13: 978-1-925489-58-3

#### *Mathematics Analysis and Approaches HL 2*

Author: Haese, Humphries, Sangwin, Vo  
Haese: 2019  
ISBN-13: 978-1-925489-59-0

### **Participation (5%)**

Participation is graded out of 20 points at the end of each semester. It is based on your attendance, any late assignments, and your overall participation in class. I highly encourage working with your peers on assignments in class as there are always classwork assignments.

### **Classwork & Assignments (5%)**

I will post all classwork lessons as well as the answer keys on the class website. I expect you to attempt the problems on your own and be responsible to check your own work. I do tend to reuse questions from lessons & assignments on assessments & tests.

### **Daily Assessments (20%)**

The start of class will be used for short assessments, 1-5 questions of ~2-3 minutes, used to monitor student progress weekly. The topic of assessment will always be the content of two lessons prior and review of previous content as the year progresses. No notes are allowed for these assessments. Assessments can be corrected for full credit.

### **Tests (50%)**

Tests are the primary tool used to measure your independent ability to demonstrate what you have learned in class. Each test will be cumulative and will include questions from previous IB examinations. The main emphasis of a test will be to check on students' long-term memory and give representative practice for the IB exam taken at the end of the two-year course. A student should expect roughly 5 tests per semester.

### **Final (20%)**

At the end of each semester, there will be a final examination that will be cumulative.

### **Late/Make-up Work**

Quizzes and tests missed due to excused/acceptable absences will need to be made-up as soon as a student returns to school, not to class (block schedule). If any content was missed in addition to the assessment (excused absence), more time will be given to make it up at Mr. Braza's discretion.

### **Villanova Graphing Calculator Policy**

The Math Department at Villanova will be requiring students to use the **TI-nspire CX calculator** for IB-level math classes. (*Do Not Purchase the CAS Model as that one is banned from use in standardized tests such as IB.*)

Link to Purchase: <https://www.amazon.com/TI-Nspire-Graphing-Calculator-Student-Software/dp/B07SDG5719>

*Please let me know if you feel you are struggling with my methods or the content. I am always open to your feedback and never will be offended because you do not like or understand how I teach something. I like to hear how I can do better so please let me know! I look forward to getting to know you and having a productive and exciting year!*

08/18 - 08/19

## Unit 0 - Review & Intro to Proof

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- Properties of Radicals
- Solving Equations & Systems of Simultaneous Equations
- Proving Numerical & Algebraic Relationships

08/19 - 09/14

## Unit 1 - Functions

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- Function Notation, Domain & Range, Graphical Analysis
- Function Transformations, Composition of Functions
- Inverse Functions

09/14 - 09/29

## Unit 2 - Quadratic Functions

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- Properties of Parabolas (Vertex, Axis of Symmetry, Intercepts)
- Quadratic Modeling & Optimization
- Analyzing Solutions to Quadratics (Discriminant)

N/A

## Rational Functions

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- *\*\*Will not be covered this year 2022-2023\*\**

10/03 - 10/05

## Quarter 1 Midterm Exam

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- *\*\*Cancelled for 2022-2023\*\**
- *PSAT/SAT Testing on 10/12*

10/14 - 11/16

## Unit 3 - Exponential & Logarithmic Functions

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- Exponential Growth & Decay
- Appreciation, Depreciation & Compounding Interest
- Logarithms & Modeling

11/18 - 12/09

## Unit 4 - Sequences & Series

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- Arithmetic Sequences & Series
- Geometric Sequences & Fractal Patterns

12/13

## Semester 1 Final Exam

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- *Good luck on finals!*

01/05 - 01/17

## Unit 4 cont. - Sequences & Series

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- Geometric Series
- Convergence & Divergence of Infinite Series
- The Binomial Theorem

01/17 - 02/17

## Unit 5 - Trigonometry Part I

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- Sine, Cosine & Tangent, and Cosecant, Secant, and Cotangent
- Radians & The Unit Circle
- Graphs of Sine and Cosine Functions

02/17 - 03/16

## Unit 6 - Trigonometry Part II

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- Graphs of Tangent & Cotangent, Secant & Cosecant
- Proving Trigonometric Identities
- Solving Trigonometric Equations

N/A

## Quarter 3 Midterm Exam

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- *\*\*Will not be covered this year 2022-2023\*\**

03/22 - 04/24

## Unit 7 - Trigonometry Part III

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- Sum and Difference Formulas, Double & Half-Angle Formulas
- Non-Right Triangle Trigonometry, Law of Sines & Cosines
- Bearings & Applications of Trigonometry

04/24 - 05/19

## Unit 8 - Intro to Vectors

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- Vector Notation, Addition & Scalar Multiplication
- Dot Product
- Applications of Vectors

N/A

## Year 2 Material - Intro to Calculus

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- *\*\*Only if we finish earlier than anticipated\*\**

05/24 - 05/26

## Semester 2 Final Exam

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- *Good luck on finals!*