ALGEBRA II CORE 2017-18

Mr. Cross
Room S205
gcross@uas.edu.uy
Textbook: *Math for the international student Pre-Diploma SL and HL, Haese & Harris Publications*

1. Course description and expectations

The Algebra II Core is a pre-IB Mathematics course, and it is taught with the IB Math SL and Math Studies courses in mind. The Algebra II Core course is meant to help students develop the necessary skills to succeed in these courses. Students considering the Math HL option must take the Algebra II Extended course.

This course covers a considerable amount of algebraic skills, trigonometry, probability, vector geometry, and problem solving. Students will need to draw on previously learned mathematical concepts and skills to be successful; in addition, strong academic and personal skills will be required. Furthermore, this course will provide opportunities for project work, with the aim to help students develop the necessary skills to produce a well-written exploration report when the time comes.

It is very important for students to understand that their responsibility and effort are crucial for success. These aspects will be particularly taken into account when grading. Please refer to the document *Student Success in Mathematics* for more details about this.

Students will be expected to regularly check the Algebra 2 Google Classroom for assignment information, study materials and other items.

2. Course Content

The table below includes an outline of the topics to be covered. The order of coverage is not necessarily the order in which the topics are presented here.

	Book Sections
1. Coordinate geometry.	
Review coordinate geometry: distance and mid-point formulas, equations of straight lines.	Chapter 5, Sections A, B, C, D, E
2. Expansion and Factorisation	
Review: distributive property and collecting like terms.	Chapter 2, Sections A, C

Factorisation.	Chapter 2, Sections B, F
3. Quadratic Equations	
Solving equations of the form $(x - h)^2 = k$	Chapter 9 Section A
Solving quadratic equations by factoring.	Chapter 9 Section B
Solving quadratic equations by completing the square.	Chapter 9 Section C
Solving quadratic equations by using the quadratic formula. The discriminant of a quadratic equation.	Chapter 9 Section E
4. Quadratic Functions	
Definition of a quadratic function. Investigating the shape of the graph of a quadratic function.	Chapter 17, Sections A, B
Finding x- and y- intercepts of a quadratic function. Intercept form of a quadratic function.	Chapter 17, Section C
Axis of symmetry and vertex of a quadratic function.	Chapter 17, Section D
5. Trigonometry	
Review: right angle trigonometry.	Chapter 10, Sections A, B, C
The unit circle.	Chapter 10, Section D
The area of a triangle.	Chapter 10, Section E
The sine law. The ambiguous case.	Chapter 10, Section F
The cosine law.	Chapter 10, Sections G, H
Radian Measure.	Chapter 18, Section A
Trigonometric ratios from the unit circle. Multiples of 30º, 45º, and 90º.	Chapter 18, Sections B, C
6. Exponential Functions and Logarithms	
Review of properties of exponents.	Chapter 16, Section A
Rational exponents.	Chapter 16, Section B
Solving exponential equations.	Chapter 16, Section G
Definition and properties of logarithms.	Chapter 16, Section I

7. Vectors	
Review: Definition of vectors and operations.	Chapter 15, Sections B, C, D, E, F
Parallel vectors.	Chapter 15, Section H
Scalar product. Angle between two vectors.	Chapter 15, Section I
8. Probabilities	
Experimental probabilities.	Chapter 11, Sections A, B
Sample space representation.	Chapter 11, Section C
Problem solving.	Chapter 11, Sections D, E, F, G
Probability of non-mutually exclusive events.	Chapter 11, Section H
Conditional probability	Chapter 11, Section I

3. Assessment

The grade each student receives at the end of each quarter is made up of three different components, as follows:

Homework. (20%) Students can expect homework every class period; this homework is expected to be attempted fully. If there are problems that students do not know, they should write them on their homework paper and bring them into class where we will go over the problems. Students should never leave an entire homework assignment blank; they should at least attempt the homework. Always write out the problem and show all work for each problem. It should be made clear that absences of any kind do not excuse the student from submitting homework punctually (of course, there is flexibility regarding major inconveniences and those can be discussed if and when they arise).

Quizzes. (20%) Short quizzes will be given regularly, with the aim of checking whether students are working on class and home assignments with responsibility. This is why students will not always be given previous warning about a quiz, since no more preparation than keeping up with the course is needed.

Tests and Projects: (50%) There will be frequent written evaluations, for which students are expected to prepare seriously. Tests will be announced at least a week in advance, to give time for students to study, review, and ask questions if necessary. In addition, there

will be at least 1 project every quarter which will count the same as a test grade. Most often (but not always) projects will be group projects.

The semester grade is made up of the grades of each quarter (40% each) and the final exam (20%). The final exam is a comprehensive exam set at the end of the semester. Students will be required to revise and study all the material covered during the semester, and proper review sessions will be conducted in class one week prior to the exam.

4. **Other important factors that contribute to your success in this class.**

Class work. This means taking an active part in the class, and is by no means limited to oral participation. While oral participation is important, a student can take active part by working seriously on completing class assignments correctly and helping other students do so. In addition, monitoring his/her own learning process is highly important for success: therefore, asking pertinent questions, requesting clarifications, or proposing tasks and examples about relevant concepts is also an important part of a successful student's class work. In addition, all students must keep complete and organized notes, and read them before coming to class. Frequent quizzes will be given to check that everyone is doing this.

Attitude. Below are examples of expected attitudes for all students:

- Treat teachers and classmates with respect.
- Arrive in class before the bell rings.
- Bring required materials to class every day.
- Show interest and commitment to completing assignments.
- Dress according to the school's dress code.
- Follow school rules at all times.

5. **Materials**

a. Hard-cover binder, **A4 size**, with 7 dividers according to the IB Math SL topics (see pre-IB curriculum guide available from the teacher's website for details).
b. Graph paper, **A4 size**.
c. Pencils, erasers, highlighters.
d. Pencil case.
e. Ruler (small enough to fit into pencil case and to be brought to class every day).
f. Graphing calculator.
g. Textbook provided by the school, to be brought to class everyday.
h. Optional: a wireless mobile device (phone, tablet, laptop) with Internet access.