GEOMETRY and STATISTICS 2017-18

Mr. Cross
Room 205
gcross@uas.edu.uy

Textbook: *Mathematics for the international student 9 MYP 4, Haese & Harris Publications*

1. Course description and expectations

Ninth grade is the initial HS course. Students are expected to have acquired adequate academic and personal skills throughout middle school and put them to good use at this moment. The course relies on students' ability to produce work independently from teacher supervision. Mathematical content is introduced which will be important throughout all future HS courses.
This Geometry and Statistics course covers a considerable number of geometric concepts, statistical and probability concepts, and problem solving. An introduction to trigonometry is also an important part of the course. Geometrical concepts will be reviewed and strengthened with a view to gaining competence and efficiency in the approach to different kinds of problems. Statistical concepts are introduced and developed; students will work with different forms of representing data, and they will be able to describe data sets and compare them. In addition, opportunities for Algebra review will be provided, since this course is bracketed between Algebra I and Algebra II. It is very important for the students to understand that their responsibility and effort are crucial for their success. These aspects will be particularly taken into account when grading.

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 Geometry 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.

Area and Volume
• Calculate areas and perimeters of various shapes, including composite shapes
• Calculate surface areas of various shapes, including composite shapes
• Calculate volumes of various shapes, including composite shapes

Transformations

- Find images of shapes under different transformations
- Identify symmetrical shapes and find axes of symmetry
- Use a grid to rotate shapes by angles which are multiples of 90`
- Find the center and scale factor given a shape and its image under a dilation

Introduction to Trigonometry

Solve problems involving sides and angles of right triangles.

Equation of a Line and Line of Best Fit

- Graphs lines given by their equations
- Find equations of lines given by different initial conditions
- Recognize, graph, and write equations of horizontal and vertical lines
- Find equations of parallel and perpendicular lines
- Solve problems involving different aspects of the equation of a line
- Determine the strength of the linear correlation between two variables by eye
- Find the line of best fit by eye, and find its equation

Probability

- Solve simple and complex probability problems
- Identify independent events, and use the formula for independent events to calculate probabilities
- Use grids, tree diagrams, and Venn diagrams to represent sample spaces and solve problems about probability
- Use the formula for mathematical expectation for simple situations

Statistics

- Calculate mean, median, mode of a data set, including grouped data
- Create and interpret frequency tables, stem and leaf plots, box and whisker plots, and cumulative frequency tables and graphs
- Estimate quartiles and percentiles from a cumulative frequency graph

Vectors

- Graph vectors given by their components, and write components of vectors given graphically
- Use vector operations graphically and analytically
- Find the magnitude of a vector
- Solve problems involving vectors, and making connections to other topics (e.g. bearings or trigonometry)

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. (30%) 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.

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.