

SL MATH 2017-18

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Textbook: *Mathematics for the international student Mathematics SL, Haese*

1. Course description and expectations

The course focuses on introducing important mathematical concepts through the development of mathematical techniques. The intention is to introduce students to these concepts in a comprehensible and coherent way, rather than insisting on the mathematical rigor required for mathematics HL. Students should, wherever possible, apply the mathematical knowledge they have acquired to solve realistic problems set in an appropriate context.

The internally assessed component, the exploration, offers students the opportunity for developing independence in their mathematical learning. Students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas. The exploration also allows students to work without the time constraints of a written examination and to develop the skills they need for communicating mathematical ideas.

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 SL Math Google Classroom for assignment information, study materials and other items.

2. 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.

Algebra
<ul style="list-style-type: none">• Sequences and Series• Exponents and Logarithms• Binomial Theorem
Functions and Equations

- Concept of a function
- Graph of a function
- Transformations of graphs
- The quadratic function
- The reciprocal function
- Exponential functions
- Solving equations analytically and graphically
- Using technology to solve equations
- Applications of graphing

Circular Functions and Trigonometry

- The circle; radius, arcs, sectors
- Definition of sine and cosine in terms of the unit circle
- The Pythagorean identity
- Double angle identities for sine and cosine
- Relationships between trigonometric ratios
- Trigonometric functions $\sin x$, $\cos x$, $\tan x$
- Composite functions, transformations, applications
- Solving trigonometric equations analytically and graphically
- Solutions of triangles
- Law of sines and cosines

Statistics and Probability

- Basic concepts; population, sample, discrete and continuous data, etc.
- Presentations of data
- Statistical measures and their interpretations
- Central tendency; mean, median, mode, quartiles, percentiles
- Measures of dispersion
- Applications
- Cumulative frequency and graphs
- Linear correlation of bivariate data
- Scatter plots, line of best fit
- Equations and applications
- Concepts of trials, outcomes, sample space and event
- Probability of an event
- Venn Diagrams, tree diagrams. Tables
- Combined events
- Mutually exclusive events
- Conditional probability
- Independent events
- Discrete random variables
- Expected values

3. IB Learner Profile

The aim of all IB programs is to develop internationally minded people who strive to be:

1. Inquirers
2. Knowledgeable
3. Thinkers
4. Communicators
5. Principled
6. Open-minded
7. Caring
8. Risk-Takers
9. Balanced
10. Reflective

Because of this, I will not be up in front of class telling you how to do things as much as I will be guiding you to learn how to understand the concepts on your own or with your classmates. This math course will require much more reading than your previous math courses. Please do not skim over the material. The changes in vocabulary and notation from your previous courses to this course are great and will be vital to your success in this class.

4. 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. There will be a minimum of 1 project each nine weeks which will also contribute to your test average. Most of the time (but not always) projects will be done in groups.

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.

5. Other items that will 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

6. Materials

- 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).
- Graph paper, A4 size.
- Pencils, erasers, highlighters.
- Pencil case.
- Ruler (small enough to fit into pencil case and to be brought to class every day).
- IB Approved Graphing calculator (TI-84 is preferred)
- Textbook provided by the school, to be brought to class everyday.
- Optional: a mobile device (phone, tablet, laptop) with Internet access