**IB Math Standard Level**

**Syllabus 2012-2013**

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**Mathematics SL—course details**

This course caters to students who already possess knowledge of basic mathematical concepts, and who are equipped with the skills needed to apply simple mathematical techniques correctly. The majority of these students will expect to need a sound mathematical background as they prepare for future studies in subjects such as chemistry, economics, psychology and business administration. 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 mathematical rigour. 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 portfolio, offers students a framework for developing

independence in their mathematical learning by engaging in mathematical investigation and

mathematical modelling. Students are provided with opportunities to take a considered approach to these activities and to explore different ways of approaching a problem. The portfolio also allows students to work without the time constraints of a written examination and to develop the skills they need for communicating mathematical ideas.

In a broad sense, the general objectives of the course are to

• read, interpret and solve a given problem using appropriate mathematical terms

• organize and present information and data in tabular, graphical and/or diagrammatic forms

• know and use appropriate notation and terminology

• formulate a mathematical argument and communicate it clearly

• select and use appropriate mathematical strategies and techniques

• demonstrate an understanding of both the significance and the reasonableness of results

• recognize patterns and structures in a variety of situations, and make generalizations

• recognize and demonstrate an understanding of the practical applications of mathematics

• use appropriate technological devices as mathematical tools

• demonstrate an understanding of and the appropriate use of mathematical modelling.

The following are the topics that are covered in the SL curriculum.

Topic 1—Algebra

Topic 2—Functions and equations

Topic 3—Circular functions and trigonometry

Topic 4—Matrices

Topic 5—Vectors

Topic 6—Statistics and probability

Topic 7—Calculus

Portfolio Year 2

Two pieces of work, based on different areas of the syllabus, representing the following two types of tasks:

• mathematical investigation

• mathematical modelling.

Where appropriate in the portfolio, students are expected to:

• know and use appropriate notation and terminology

• organize and present information and data in tabular, graphical and/or diagrammatic forms

• recognize patterns and structures in a variety of situations, and make generalizations

• demonstrate an understanding of and the appropriate use of mathematical modelling

• recognize and demonstrate an understanding of the practical applications of mathematics

• use appropriate technological devices as mathematical tools.

An IB rubric will be provided to each student before they begin their portfolio investigations. The first portfolio will be **due before Thanksgiving** and the second will be **due in February**. These are times in the year when there are not large assignments due in other subjects.

**Grading Policy:** A modified form of Standards-Based Grading will be used. *These percentages may be adjusted depending on coverage during each semester.* Homework will be graded for accuracy through the use of Homework Checks (assessments of similar problems, with use of notes and homework permitted) following each one or two assignments after review. These grades will be applied in their appropriate category.

**Year One: Year Two:**

***Semester 1*** ***Semester 1***

Algebra **12%** Paper **5%**

Functions **20%** Calculus  **55%**

Trigonometry **14%** Portfolio 1 **20%**

Matrices **6% Final Exam 20%**

Vectors **10%**

Statistics **18%**

**Final Exam 20%**

***Semester 2 Semester 2***

Calculus: Individualized Review:

Limits **10%** Core Topics **20%**

Derivatives: Calculus Topics **20%**

Definition **10%** Portfolio 2 **20%**

Derivative Rules **20%** Mock Exams **20%**

Applications **20%** Final Paper 1 **10%**

Mock Exams **20%** Final Paper 2 **10%**

**Final Exam 20%**