GROUP 5- MATHEMATIC HL

NATURE OF THE SUBJECT

This course caters for students with a good background in mathematics who are competent in a range of analytical and technical skills. The majority of these students will be expecting to include mathematics as a major component of their university studies, either as a subject in its own right or within courses such as physics, engineering and technology. Others may take this subject because they have a strong interest in mathematics and enjoy meeting its challenges and engaging with its problems.

Source : IBO, OCC - Mathematics HL guide

AIMS

The aims of all mathematics courses in group 5 are to enable students to:

1. enjoy mathematics, and develop an appreciation of the elegance and power of mathematics
2. develop an understanding of the principles and nature of mathematics
3. communicate clearly and confidently in a variety of contexts
4. develop logical, critical and creative thinking, and patience and persistence in problem-solving
5. employ and refine their powers of abstraction and generalization
6. apply and transfer skills to alternative situations, to other areas of knowledge and to future developments
7. appreciate how developments in technology and mathematics have influenced each other
8. appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
9. appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
10. appreciate the contribution of mathematics to other disciplines, and as a particular "area of knowledge" in the TOK course.

Source : IBO, OCC - Mathematics HL guide

SYLLABUS OUTLINE (The syllabus is subject to changes according to the needs and preferences of the class)

Year 1
Topics in the CORE Algebra; Functions and equations; Circular functions and trigonometry; Vectors; Statistics and probability; Calculus

Year 2
The Option : Topic 9 Calculus
SKILLS to be assessed in the 2 years of the Diploma Problem-solving is central to learning mathematics and involves the acquisition of mathematical skills and concepts in a wide range of situations, including non-routine, open-ended and real-world problems. Having

followed a DP mathematics HL course, students will be expected to demonstrate the following.

1. Knowledge and understanding: recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.
2. Problem-solving: recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.
3. Communication and interpretation: transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation.
4. Technology: use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.
5. Reasoning: construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.
6. Inquiry approaches: investigate unfamiliar situations, both abstract and real-world, involving organizing and analysing information, making conjectures, drawing conclusions and testing their validity.

Source : IBO, OCC - Mathematics HL guide

ASSESSMENT – OUTLINE

Assessment component	Weighing
External assessment **Paper 1** (2 hrs) No calculator allowed; 100 marks Section A: compulsory short response questions based on the core syllabus Section B: compulsory extended response questions based on the core syllabus	30%
Paper 2 (2 hrs) Graphic display calculator required; 100 marks Section A: compulsory short response questions based on the core syllabus Section B: compulsory extended response questions based on the core syllabus	30%
Paper 3 (1 hr) Graphic display calculator required; 50 marks Compulsory extended response questions based mainly on the syllabus selected option	20%
Internal assessment **Mathematical exploration** Internal assessment in mathematics HL is an individual exploration. This is a piece of written work that involves investigating an area of mathematics. (20 marks)	20%

Source : IBO, OCC - Mathematics HL guide