GROUP 5- MATHEMATICAL STUDIES SL

NATURE OF THE SUBJECT

This course is available at standard level only and addresses different needs. It has an emphasis on applications of mathematics, and the largest section is on statistical techniques. It is designed for students with varied mathematical backgrounds and abilities. It offers students the opportunity to learn important concepts and techniques that can be applied in a variety of settings.
Students taking this course are well prepared for a career in social sciences, humanities, languages or arts. These students may need to utilize the statistics and logical reasoning that they have learned as part of the mathematical studies SL course in their future studies.

Source : IBO, OCC - Mathematical Studies 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.

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

Year 1
Topics
Number and Algebra
Descriptive Statistics
Statistical applications
Geometry and Trigonometry
Year 2
Topics
Logic, sets and probability
Mathematical models
Introduction to differential calculus

SKILLS to be assessed in the 2 years of the Diploma

Knowledge and understanding: recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.

Problem-solving: recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.

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.

Technology: use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.

Reasoning: construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.

Investigative approaches: investigate unfamiliar situations involving organizing and analysing information or measurements, drawing conclusions, testing their validity, and considering their scope and limitations.

ASSESSMENT – OUTLINE

Assessment component	Weighing
External assessment **Paper 1** (1hr 30 min): 15 compulsory short-response questions covering the syllabus. Each question is worth 6 marks. **Paper 2** (1 hr 30 min): 6 compulsory extended-response questions of different length and level of difficulty. Not necessarily all the topics in the Syllabus are covered	40% 40%
Internal assessment **PROJECT** The project is an individual piece of work involving the collection of information or the generation of measurements, and the analysis and evaluation of the information or measurements.	20%