Mathematics Course Outline

IB Mission Statement

The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

Bladins International School Mission Statement

The mission of Bladins International School is to fully develop the student's intellectual, aesthetic, emotional, physical and moral potential and, as a school, serve as an example of educational excellent.

Teaching and Learning within the Middle Years Programme at Bladins

The Middle Years Programme is designed to challenge teenagers in a number of ways. As part of the Middle Years Programme the students at Bladins IS are given an awareness of the ever changing world through a challenging and demanding curriculum, fostering an appreciation and a love for learning. The curriculum at Bladins IS enables students to make connections between the subjects and the concepts taught, in context of today's world.

Together with the IB Learner Profile attributes http://www.ibo.org/en/benefits/learner-profile/, our students are encouraged to inquire, take action and reflect on their learning. Through a conceptual approach to teaching and learning students are taught how to view subject content through a variety of frameworks and make associations between subjects.

The programme allows students to build on their personal strengths and to embrace challenges in subjects in which they might not excel. The MYP offers students opportunities to develop their potential, to explore their own learning preferences, to take appropriate risks, and to reflect on, and develop, a strong sense of personal identity. (MYP:From Principles into Practice, 2014)

Aims of the Mathematics Course at Bladins International School

The aims of the teaching and learning of MYP Mathematics. are to encourage and enable students to:

- enjoy mathematics, develop curiosity and begin to appreciate its elegance and power
- develop an understanding of the principles and nature of mathematics
- communicate clearly and confidently in a variety of contexts
- develop logical, critical and creative thinking
- develop confidence, perseverance, and independence in mathematical thinking and problem-solving
- develop powers of generalization and abstraction
- apply and transfer skills to a wide range of real-life situations, other areas of knowledge and future developments
- appreciate how developments in technology and mathematics have influenced each other
- appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
- appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
- appreciate the contribution of mathematics to other areas of knowledge
- develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics
- develop the ability to reflect critically upon their own work and the work of others.

MYP Mathematics Objectives

A: MYP 1	MYP 3	MYP 5
At the end of the first year, students should be able to:	***At the end of the third year, students should be able to:***	***At the end of the fifth year, students should be able to:***
i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations	i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations	i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations
ii. apply the selected mathematics successfully when solving problems	ii. apply the selected mathematics successfully when solving problems	ii. apply the selected mathematics successfully when solving problems
iii. solve problems correctly in a variety of contexts.	iii. solve problems correctly in a variety of contexts.	iii. solve problems correctly in a variety of contexts.

B: MYP 1	MYP 3	MYP 5
At the end of the first year, students should be able to:	***At the end of the third year, students should be able to:***	***At the end of the fifth year, students should be able to:***
i. apply mathematical problem-solving techniques to recognize patterns	i. select and apply mathematical problem-solving techniques to discover complex patterns	i. select and apply mathematical problem-solving techniques to discover complex patterns.
ii. describe patterns as relationships or general rules consistent with correct findings	ii. describe patterns as relationships and/or general rules consistent with findings.	ii. describe patterns as general rules consistent with findings
iii. verify whether the pattern works for other examples	iii. verify and justify relationships and/or general rules	iii. prove, or verify and justify, general rules

C: MYP 1	MYP 3	MYP 5
At the end of the first year, students should be able (with modifications) to:	***At the end of the third year, students should be able (in more complex activities) to:***	***At the end of the fifth year, students should be able to:***
I. use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements	i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations	i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations
ii. use different forms of mathematical representation to present information.	ii. use different forms of mathematical representation to present information	ii. use appropriate forms of mathematical representation to present information
iii. communicate coherent mathematical lines of reasoning	iii. move between different forms of mathematical representation	iii. move between different forms of mathematical representation
iv. organize information using a logical structure	iv. communicate complete and coherent mathematical lines of reasoning	iv. communicate complete, coherent and concise mathematical lines of reasoning
	v. organize information using a logical structure.	v. organize information using a logical structure

D: MYP 1	MYP 3	MYP 5
At the end of the first year, students should be able to:	***At the end of the third year, students should be able to:***	***At the end of the fifth year, students should be able to:***
i. identify relevant elements of authentic real-life situations	i. identify relevant elements of authentic real-life situations	i. identify relevant elements of authentic real-life situations
ii. select appropriate mathematical strategies when solving authentic real-life situations	ii. select appropriate mathematical strategies when solving authentic real-life situations	ii. select appropriate mathematical strategies when solving authentic real-life situations
iii. apply the selected mathematical strategies successfully to reach a solution	iii. apply the selected mathematical strategies successfully to reach a solution	iii. apply the selected mathematical strategies successfully to reach a solution
iv. explain the degree of accuracy of a solution	iv. explain the degree of accuracy of a solution	iv. justify the degree of accuracy of a solution.

v. describe whether a solution makes sense in the context of the authentic real-life situation.	v. explain whether a solution makes sense in the context of the authentic real-life situation	v. justify whether a solution makes sense in the context of the authentic real-life situation

Mathematics topics include:

Mathematics units and activities in MYP 1 through to MYP 5….

The taught and assessed curriculum in each year of Mathematics throughout MYP 1-5 may include:

Equations and Formulae	Deductive Geometry	Investigations
Spreadsheeting	Real-life Context Problems	Statistics as Research
Financial Mathematics	Vectors	Pythagorean Theorem
Graphing	Trigonometry	Probability

Assessment in Mathematics

Assessment is intended as an extension of the learning process for students, and this course gives students many different ways to demonstrate their understanding and skills.

Teachers clarify the expectations for each summative assessment task with direct reference to these assessment criteria. Task-specific clarifications should clearly explain what students are expected to know and do. They might be in the form of:

- a task-specific version of the required assessment criteria
- a face-to-face or virtual classroom discussion
- a detailed task sheet or assignment.

In MYP 1 through MYP 5 student achievement in Mathematics is assessed against the following four criteria:

A. **Knowing and Understanding**:
B. **Investigation of Patterns:**
C. **Communicating**
D. **Applying Mathematics in Real-Life Contexts**

Students achieve a level from 0-8 in each criterion and these are added together to calculate the final overall achievement level in sciences using the following table.

Final achievement Level	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Total mark/32	***1-5***	***6-9***	***10-14***	***15-18***	***19-23***	***24-27***	***28-32***