Mathematics

Mathematics: Analysis and Approaches HL

For students who wish to study mathematics as a subject in its own right or to pusue their interests in areas related to mathematics. AA is for students who enjoy developing their mathematics to become fluent in the construction of mathematical arguments and develop strong skills in mathematical thinking. They will also be fascinated by exploring real and abstract applications of these ideas, with and without technology. Students who take Mathematics: analysis and approaches will be those who enjoy the thrill of mathematical problem solving and generalization.

Strong algebraic skills and the ability to understand simple proofs.

Link to IBO subject brief https://www.ibo.org/contentassets/5895a05412144fe890312bad52b17044/subject-brief-dp-math-analysis-and-approaches-en.pdf

Mathematics: Applications and Interpretations SL

For students who wish to gain understanding and competence in how mathematics relates to the real world and to other subjects. AI is for students who are interested in developing their mathematics for describing our world and solving practical problems. They will also be interested in harnessing the power of technology alongside exploring mathematical models.

Students who take Mathematics: applications and interpretation will be those who enjoy mathematics best when seen in a practical context.

Good algebraic skills and enjoy solving real-world problems.

Link to IBO subject brief https://www.ibo.org/contentassets/5895a05412144fe890312bad52b17044/subject-brief-dp-math-applications-and-interpretations-en.pdf

The Teachers

Else Letort (EL)

Lars Vejen Jensen (LJ)

Bente Gade (BG)

Mogens Engberg Pedersen (MP)

Ritt Sønnichsen (RS)

Søren Detlefsen (SD)

Thor Langgård (TLA)

Sandra Høegh Wedell-Wedellsborg (SH)

Mathematics and theory of knowledge

Mathematics is a particular area of knowledge in the TOK course. A fundamental question for all knowers is whether mathematical knowledge really exists independently of our thinking about it. Is it there, "waiting to be discovered", or is it a human creation?

Students' attention will be drawn to theory of knowledge questions in mathematics, and they will be encouraged to raise such questions themselves.

Mathematics and international-mindedness

Aim: to enable students to appreciate the universality of mathematics and is multicultural, international and historical perspectives

- Mathematics as an international language
- The history of mathematics
- The key role of mathematics in science and technology

Skills and toolkit (ATL)	Topics	Assessments objectives
• Conceptual understandings • Mathematical inquiry • Mathematical modeling • Proof • Use of technology	• Number and algebra • Functions • Geometry and trigonometry • Probability and statistics • Calculus	• Knowledge and understanding • Problem solving • Communication and interpretation • Technology • Reasoning • Inquiry and approaches

Concepts and conceptual understanding - the nature of mathematics

- **Approximation:** This concept refers to a quantity or a representation which is nearly but not exactly correct.
- **Change:** This concept refers to a variation in size, amount or behaviour.
- **Equivalence:** This concept refers to the state of being identically equal or interchangeable, applied to statements, quantities or expressions.
- **Generalization:** This concept refers to a general statement made on the basis of specific examples.
- **Modelling:** This concept refers to the way in which mathematics can be used to represent the real world.
- **Patterns:** This concept refers to the underlying order, regularity or predictability of the elements of a mathematical system.
- **Quantity:** This concept refers to an amount or number.
- **Relationships**: This concept refers to the connection between quantities, properties or concepts; these connections may be expressed as models, rules or statements. Relationships provide opportunities for students to explore patterns in the world around them.
- **Representation:** This concept refers to using words, formulae, diagrams, tables, charts, graphs and models to represent mathematical information
- **Space:** This concept refers to the frame of geometrical dimensions describing an entity
- **Systems**: This concept refers to groups of interrelated elements
- **Validity**: This concept refers to using well-founded, logical mathematics to come to a true and accurate conclusion or a reasonable interpretation of results.