

Mr. Spohn

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IB Mathematics: Applications and Interpretation (SL) – Senior (2nd year) Syllabus 2023-2024

Course Description and Aims

This course recognizes the increasing role that mathematics and technology play in a diverse range of fields in a data-rich world. As such, it emphasizes the meaning of mathematics in context by focusing on topics that are often used as applications or in mathematical modelling. To give this understanding a firm base, this course also includes topics that are traditionally part of a pre-university mathematics course such as calculus and statistics. The course makes extensive use of technology to allow students to explore and construct mathematical models. Mathematics: applications and interpretation will develop mathematical thinking, often in the context of a practical problem and using technology to justify conjectures.

Curriculum Overview

The following is a complete list of topics for IB Mathematics: Applications and Interpretation SL. These topics will be covered during both the first and second year of the course. Students will also complete an Internal Assessment Project (IA) (20% of IB grade) and IB Exams for Mathematics: Applications and Interpretation SL (Papers 1 and 2, each 40% of IB grade) during the second year of the course.

Topic 1 Numbers and algebra

Topic 2 Functions

Topic 3 Geometry and trigonometry

Topic 4 Statistics and probability

Topic 5 Calculus

The “toolkit” and mathematical exploration

Math Exploration/Internal Assessment: Internal assessment is an integral part of the course and is compulsory for SL students. A student is to demonstrate the application of their skills and knowledge as they pursue their personal interests without the time limitations and other constraints that are associated with written examinations. The internal assessment requirement is an individual exploration. This is a piece of written work that involves investigating an area of mathematics. It is marked according to five assessment criteria: presentation, mathematical communication, personal engagement, reflection and use of mathematics.

Assessment Objectives

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 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 abstract and real-world 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; use appropriate notation and terminology.
4. Technology: Use technology accurately, appropriately and efficiently both to explore new ideas and to solve problems.
5. Reasoning: Construct mathematical arguments through the use of precise statements, logical deduction and inference and by the manipulation of mathematical expressions.
6. Inquiry approaches: Investigate unfamiliar situations, both abstract and from the real world, involving organizing and analyzing information, making conjectures, drawing conclusions, and testing their validity.

TOK Connections

TOK explores eight ways of knowing. Mathematics is best suited to three: Reason, Memory, and Language. Since its adoption into human knowledge, mathematics has been used for problem solving, reasoning by defining, eliminating, and calculating variables to represent unknown pieces of information. It is a crucial part of language, as it requires developing vocabulary with a thorough understanding of applying that vocabulary to a variety of situations. Finally, it calls on memory for pattern recognition and memorization of formulae.

Grading Procedures (for SHS report card)

Each quarter grade is computed based on the following criteria: Tests(Major)—60% Quizzes(Minor)—40% Homework—The homework average will be entered as a minor grade at the end of each quarter. (So homework average counts like one quiz grade.)

Each semester grade will be the average of the two quarters of that semester. The final average will be the average of the two semesters. There will not be an exam during this junior year.

Grades can be accessed using Parent Portal which can be reached through the school website

(<http://shs.sumterschools.net/>)

Homework Policy

Homework is an essential part of learning. Homework needs to be worked by the individual student even when working with another student or with a group. Homework that is copied from any source is considered cheating and will result in a zero on the assignment. (Please refer to the SHS IB Academic Honesty Policy.) Fully completed homework (all work shown) is worth 100% when graded by completeness and effort. It is the responsibility of every student to complete every assignment and turn it at the time it is due. Failure to do so will result in a zero on the assignment. If a student chooses not to complete a homework assignment, it is the teacher's discretion on whether or not a late assignment will be accepted and if accepted a reduced grade will be given. Turning in an assignment late is a privilege.

Make-up Policy

If a student is absent for any reason, the student is responsible for turning in any work due on the day missed as well as for asking for any missed work from the teacher or another student. Missing work is expected to be turned in as soon as possible. Until work is submitted, a grade of zero will be put into PowerSchool for the particular assignment. If the student misses a test or quiz, the student is the one who is responsible for arranging with the teacher to take the test or quiz. Until the test or quiz is taken, a grade of zero will be in the grade book for that assignment.

Retake Policy

As provided by the District's Grading Policy, a student who scores below 60% on a major assessment may attend tutoring and retake the assessment. The student will receive the higher of the two grades, not to exceed a passing grade of 60%.

Rules and Procedures:

1. Be on time to class.
2. Be prepared for class with all required materials and assignments.
3. Be on task at all times.
4. Be respectful to others.
5. Follow all school rules listed in the SHS Student Handbook and classroom syllabus.

My Expectations: I expect each scholar to:

1. Follow the teacher's instructions the first time given.
2. Complete notes.
3. Review notes each day.
4. Ask questions so that you can experience success.

Extra Help

There are many resources for you to be successful in this class.

-Online videos and tutorials: www.ixl.com, www.khanacademy.com, eddie woo, patrickjmt

-Online sample IB assessments (limited for this new course)

-**Tutoring:** Afterschool tutoring is available from 3:50-4:50pm

Supplies needed:

A way to take notes (notebook of your choice)

Pens and pencils with erasers

Colored pencils (optional, but often helpful with graphs)

Ruler or other straightedge (some available for in-class use)

Notebook and graph paper

Textbook (to be issued by Mrs. Burns)

TI 83 or TI 84 calculator

If a Ti-84 is not available outside of class, free emulator apps may be used, including wabbitemu on the play store, and Calculate84 on the app store. Note that the usage of phones is prohibited in school without express permission of the teacher, and will not be allowed during exams

Contact Information

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