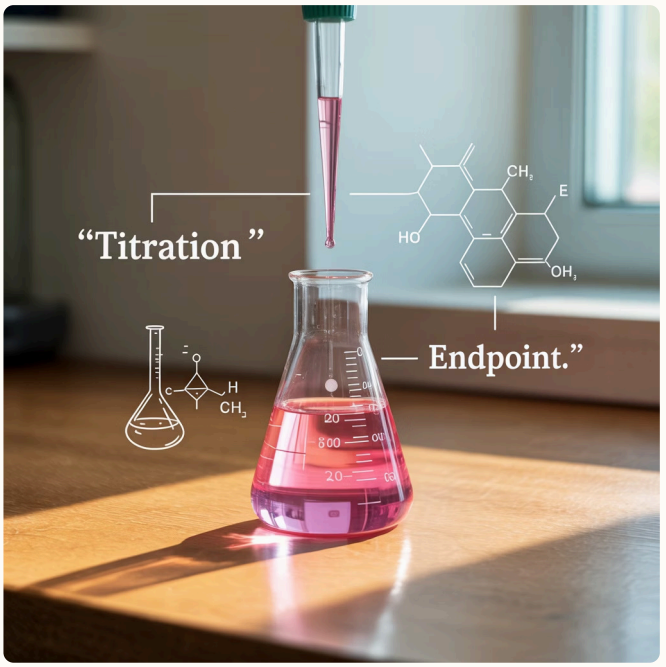
IB Chemistry

Course Description

This course offers students a comprehensive exploration of chemical principles, fostering critical thinking and problem-solving skills. With a curriculum structured around core topics such as stoichiometry, atomic structure, chemical bonding, thermodynamics, kinetics, equilibrium, and organic chemistry, students will engage in both theoretical understanding and practical experimentation. The course encourages scientific inquiry through hands-on laboratory work, promoting collaboration and effective communication. Assessment includes a combination of internal investigations and external examinations, preparing students for further studies in chemistry and related fields while cultivating a deeper appreciation for the impact of chemistry on the world.



Course Objectives

Understanding Scientific Concepts

Develop a deep understanding of core chemical principles, theories, and concepts, enabling students to connect and apply their knowledge to real-world situations and scientific problems.

Practical Skills Development

Cultivate practical experimental skills through hands-on laboratory experiences, emphasizing the scientific method, data analysis, and the safe use of laboratory equipment to foster confidence in conducting experiments.

Critical Thinking and Inquiry

Enhance critical thinking and analytical skills by encouraging students to engage in scientific inquiry, formulate hypotheses, evaluate evidence, and draw conclusions, thereby preparing them for further studies and challenges in the field of science.

Syllabus Structure

1	**Structure 1: Models of the Particulate Nature of Matter** Students learn about atomic and molecular models that explain how matter behaves on a microscopic level, including the composition of atoms and the arrangement of particles in solids, liquids, and gases.
2	**Structure 2: Models of Bonding and Structure** This topic covers different types of chemical bonding (ionic, covalent, metallic) and how these bonds affect the properties and structures of substances, which is essential for predicting their behavior.
3	**Structure 3: Classification of Matter** Students focus on categorizing matter based on its properties and compositions, distinguishing between pure substances and mixtures, and studying the periodic table to understand trends in chemical behavior.

Teaching Hours

SL (Standard Level):

- Structure 1: 110 hours
- Structure 2: 17 hours
- Structure 3: 20 hours

HL (Higher Level):

- Structure 1: 180 hours
- Structure 2: 21 hours
- Structure 3: 30 hours

These topics provide a strong foundation for both SL and HL courses, supporting further studies in chemistry and related fields.

External Assessment Criteria

External Assessment: HL

Paper 1

- **Duration:** 2 hours
- **Weighting:** 36%
- **Marks:** 75
- **Format:** Two separate booklets
- **Paper 1A:** 40 multiple-choice questions (40 marks) covering both standard and higher-level material. No penalty for incorrect answers.
- **Paper 1B:** 35 marks for data-based and experimental work questions.
- **Assessment Objectives:** 1, 2, and 3
- **Additional Notes:** Calculators allowed. Students need a clean copy of the Chemistry data booklet.

Paper 2

- **Duration:** 2 hours 30 minutes
- **Weighting:** 44%
- **Marks:** 90
- **Format:** Short-answer and extended-response questions on both standard and higher-level material.
- **Assessment Objectives:** 1, 2, and 3
- **Additional Notes:** Calculators allowed. Students need a clean copy of the Chemistry data booklet.

External Assessment: SL

The assessment criteria for SL would be similar in structure but with adjustments in duration, weighting, and marks to reflect the SL requirements. Typically, SL papers are shorter and may have different weightings. The use of calculators and the Chemistry data booklet applies similarly.

Internal Assessment Criteria

Internal Assessment: SL & HL

1	2	3
Research Question Students must formulate a unique research question with teacher guidance, ensuring individual data collection.	**Methodology (Individual Work)** Students develop their own experimental design, with peer support during data collection.	**Methodology (Collaborative Work - Optional)** Groups of up to three can collaborate on methodology, but each student must individually investigate their research question and data.

4	5
Conclusion Assesses how well the student answers their research question through data analysis, consistent with the accepted scientific context, including uncertainties.	**Evaluation** Assesses the student's evaluation of the investigation's methodology, including specific weaknesses, limitations, and relevant improvements.

Learning Approach

Engagement with Sensitive Topics

Encourages exploration of exciting and personally relevant topics, guiding students to engage responsibly with sensitive issues.

Prior Learning Recognition

Acknowledges students' previous experiences and knowledge, especially from the IB Middle Years Programme, to support their chemistry learning.

Development of Skills and Attitudes

Focuses on building skills and attitudes through theoretical, experimental, and authentic contexts to align with pre-university science levels.

Flexible Framework

Offers a flexible learning framework that allows variation in content while maintaining prescribed standards in DP sciences.

Teaching Approach

Contextual Engagement

Teaching chemistry in relation to topical scientific issues helps students understand and evaluate scientific claims more effectively, fostering interest and curiosity.

Relevance to Global and Local Contexts

Relating chemistry content to real-world applications helps students appreciate the significance of chemistry in their own and global contexts.

Ethical and Environmental Awareness

Encourages appreciation for the implications of scientific solutions, enhancing understanding of ethical, environmental, and economic impacts.

Support Materials

Utilizes support materials to explore problem-solving skills and stimulate application of ideas in various contexts.

Assessment Breakdown

SL Assessment Breakdown

External Assessment (70%)

- Paper 1 (45 minutes): Multiple-choice questions.
- Paper 2 (1 hour 15 minutes): Short-answer and extended-response questions.
- Paper 3 (1 hour): Data-based questions and options.

Internal Assessment (30%)

- One task focused on a scientific investigation.
- Assessed internally by teachers and moderated externally.

HL Assessment Breakdown

External Assessment (80%)

- Paper 1 (2 hours): Multiple-choice and data-based questions (36%).
- Paper 2 (2 hours 30 minutes): Short-answer and extended-response questions (44%).

Internal Assessment (20%)

- One task focused on a scientific investigation.
- Assessed internally and moderated externally by the IB.

Learning Platform for Past Papers

To further support our students, we offer access to a specialized learning platform utilized by international schools. This platform allows students to:

Practice Past Papers

Drill past papers and practice exam-style questions, ensuring they are well-prepared for assessments.

Instant Feedback

Receive instant feedback on their performance and areas for improvement.

Access Resources

Access a wide bank of resources, including study guides and exam tips tailored for IB Mathematics.

Interactive Quizzes

Engage in interactive quizzes to reinforce learning and assess your understanding.