



INTEGRATES SCIENCES – BIOLOGY- CHEMISTRY

GRADES 6 – 10

MYP 1 - 5

Sciences MYP curriculum objectives: Grades 6 - 10

Knowing and understanding

- Explain scientific knowledge
- Apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations
- Analyse and evaluate information to make scientifically supported judgments.

Sciences MYP curriculum objectives: Grades 6 - 10

Inquiring and designing

- ▶ Explain a problem or question to be tested by a scientific investigation
- ▶ Formulate a testable hypothesis and explain it using scientific reasoning
- ▶ Explain how to manipulate the variables, and explain how data will be collected
- ▶ Design scientific investigations.

Sciences MYP curriculum objectives: Grades 6 - 10

Processing and evaluating

- ▶ Present collected and transformed data
- ▶ Interpret data and explain results using scientific reasoning
- ▶ Evaluate the validity of a hypothesis based on the outcome of the scientific investigation
- ▶ Evaluate the validity of the method
- ▶ Explain improvements or extensions to the method.

Sciences MYP curriculum objectives: Grades 6 - 10

Reflecting on the impacts of science

- ▶ Explain the ways in which science is applied and used to address a specific problem or issue
- ▶ Discuss and evaluate the various implications of the use of science and its application in solving a specific problem or issue
- ▶ Apply scientific language effectively
- ▶ Document the work of others and sources of information used

Syllabus

Integrated sciences
Grades 6-7-8

- Scientists and Solutions
- Change
- How do living things work?
- Modelling Movement
- Chemical Change
- Who are we?
- Energy, Work, Power, Machines
- Human Impact
- Electricity and Magnetism
- Chemical Reactions

Syllabus

Biology
Chemistry
Grades 9-10

- Balanced Systems
- All living things have genes
- How life is organized
- Health and Lifestyle
- Matter
- Pure substances, Solutions and mixtures
- Classification of elements
- Chemical Bonding
- Chemical nomenclature-Chemical equations-Acids and Bases reactions
- Food chemistry
- Periodic table and trends
- Stoichiometry
- Redox reactions
- Thermochemistry
- Acids and Bases in water
- Kinetics and equilibrium
- Organic chemistry

Requirements for Honors Biology Class

- Students are getting high grades in all class assignments and checkpoints.
- Students are consistent by following deadlines and being focused on their tasks.
- Students can easily complete the classwork.
- Students can solve challenge questions/problems in class.
- Students show that they can think differently, unconventionally, or from a new perspective.
- Students provide support to other students.
- Students demonstrate a positive attitude and willingness to face challenges.

Content of Honors Biology Class

Since research skills carry significant weight in the Diploma program (20 % of the final grade), our additional topics will be intricately connected to this essential aspect. These topics will serve as preparatory steps, equipping students with the necessary skills and knowledge required to excel in this assessment. Here is what students in honors classes will learn to prepare for the IB diploma:

▶ Research design

- Research question
- Independent and dependent variables
- Background theory
- Research justification
- Methodological consideration
- Methods for measuring the dependent and independent variables are justified.
- Process of collecting sample data
- Specification of the number of repetitions, range, interval, or values of the independent variable Precision of measurements
- Control variables
- Other variables
- Safety, ethical or environmental issues

▶ Data analysis

- Recording data (precision of measuring) Quantitative and qualitative data Minimum uncertainty
- Excel: processing data
- Tables and graphs (metric units, decimal places, uncertainty figures)
- Standard deviation
- Standard error
- Measures of central tendency T-test
- Analysis of variance (ANOVA) Chi-squared test Box-and.whiskers plots. Percentage change
- Error bars R2

Content of Honors Biology Class

▶ Conclusions

- Summarize Findings
- Revisit the Research Question
- Discuss Implications
- Consider Alternative Explanations
- Connect to the Introduction

▶ Evaluation

- Evaluate Research Objectives
- Assess Research Methods
- Analyze Data and Results
- Examine Sources and Citations
- Consider Ethical Considerations
- Reflect on Limitations
- Discuss Implications
- Suggest Future Research