



Willows Preparatory School 2020-2021

Subject Aims

- Understand and appreciate science and its implications
- Consider science as a human endeavor with benefits and limitations
- Cultivate analytical, inquiring, and flexible minds that pose questions, solve problems, construct explanations and judge arguments
- Develop skills to design and perform investigations, evaluate evidence, and reach conclusions
- Build an awareness of the need to effectively collaborate and communicate
- Apply language skills and knowledge in a variety of real-life contexts
- Develop sensitivity towards the living and non-living environments
- Reflect on learning experiences and make informed choices

Keys to Class

- ❖ **THE LIVING EARTH** - Biozone– Integrated Life and Earth Science
- ❖ **OXFORD MYB Biology**- 4th 7 5th year.
 - PDFs made available through OneNote
 - LearnSmart© access for each textbook
 - eBook availability
 - Labster – case-based real-life simulation laboratory investigations
- ❖ **OneNote – Content Manager**
 - Course assignments, learning modules, laboratory investigations, supplementary material and reflections.
 - Primary location for collaboration and project work.
- ❖ **Next Generation Science Standards (NGSS) within the IB Framework** – Students assessed through IB criteria

Collaboration	Communication
Knowledge Construction	Self-Regulation
Real-World Context	Applying Technology

I.B. Grading Criteria

Objective A: Knowing and Understanding	<ul style="list-style-type: none">• Are students able to explain scientific knowledge using the appropriate language?• Can students apply their scientific knowledge to solve problems in new and unfamiliar situations?• Can students use and evaluate information to make scientifically supported judgements?
Objective B: Inquiring and designing	<ul style="list-style-type: none">• Can students explain a problem or question that can be tested by a scientific investigation?• Can students formulate a testable hypothesis that can identify independent and dependent variables as well as a logical justification for their relationship?
Objective C: Processing and evaluating	<ul style="list-style-type: none">• Can students present collected data and transform data to reflect meaningful analysis?• Are students able to evaluate a hypothesis based on experimental results as well as the validity of the experimental method?
Objective D: Reflecting on the impacts of science	<ul style="list-style-type: none">• Are students able to connect scientific topics and relate them to specific real-world issues?• Are students able to discuss the implications of scientific breakthroughs or discoveries and their relevance?• Can students document the work of others and sources of information used?

Content Brief

Semester 1	Semester 2
<ul style="list-style-type: none">❖ From molecules to organisms; Structure, Functions & Growth<ul style="list-style-type: none">• Constructing an explanation based on evidence for how the structure of Macromolecules determines their functions• Developing and using a model to illustrate the hierarchical organization of interacting systems.• Use a model to illustrate the role of cellular division.❖ Ecosystems Interactions and Energy<ul style="list-style-type: none">• Using mathematical representations to support claims for the cycling of matter.• Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems.	<ul style="list-style-type: none">❖ History of earth's atmosphere; Photosynthesis & respiration<ul style="list-style-type: none">• Developing a model to illustrate the mechanism of photosynthesis and transformation of light energy into chemical energy.• Constructing and revising an explanation based on evidence for how• Using a model to illustrate the chemical process in cellular respiration.❖ Inheritance of traits<ul style="list-style-type: none">• Understanding the relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.• Constructing and defending a claim based on evidence about inheritable genetic variations.• Applying concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.❖ Evolution and diversity of life<ul style="list-style-type: none">• Understanding the common misconceptions about Evolution• Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.