



### 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

- **International dimension:** Students develop an appreciation that science requires open-mindedness and freedom of thought transcending gender, political, cultural, linguistic, national and religious boundaries.
- **Aesthetic dimension:** Students engage with the complexities, intricacies and beauty of science, which arouses their curiosity and heightens their learning.
- **Ethical dimension:** Students reflect on the ethical, social, economic, political, cultural and environmental implications of using science to solve specific problems. Students develop a personal, ethical stance on science-related issues.
- **Learning through investigation:** Students construct meaning by designing, conducting and reflecting on scientific investigations. The scientific process, which encourages hands-on experience, inquiry, and critical thinking, enables students to make informed and responsible decisions, not only in science but also in other areas of life.
- **Collaboration:** Students are provided opportunities to work individually and with their peers to learn about science within and beyond the classroom. They develop safe and responsible working habits in practical science.

## I.B. Grading Criteria

<b>Objective A: Knowing and Understanding</b>	Can we make scientifically supported judgments about the validity and/or quality of information presented to us?
<b>Objective B: Inquiring and Designing</b>	Can we investigate an open-ended problem and design a logical, complete and safe method to better understand the problem?
<b>Objective C: Processing and evaluating</b>	What are the analytical thinking skills, which we can use to evaluate methods and discuss possible improvements or extensions?
<b>Objective D: Reflecting on the impacts of science</b>	Do we understand the impact of science? Can we discuss the implications of using science interacting with one of the following factors: moral, ethical, social, economic, political, cultural or the environment?

## Content Brief

Semester 1	Semester 2
<p><b>Unit 1: Colossal Collisions-</b> <i>What are the effects of an asteroid collision and how can we prevent a future one?</i></p> <ul style="list-style-type: none"> <li>• LS4.A: Evidence of Common Ancestry and Diversity</li> <li>• PS2.A: Forces and Motion</li> <li>• PS2.B: Types of Interactions</li> <li>• PS3.A: Definitions of Energy</li> <li>• ETS1.A: Defining and Delimiting Engineering Problems</li> <li>• ETS1.B: Developing Possible Solutions</li> <li>• ETS1.C: Optimizing the Design Solution</li> </ul> <p><b>Unit 2: Travelling Through Space-</b> <i>What forces keep the parts of our solar system together and how can we use this knowledge to plot a telescope route through space?</i></p> <ul style="list-style-type: none"> <li>• ESS1.A: The Universe and Its Stars</li> <li>• ESS1.B: Earth and the Solar System</li> <li>• PS2.B: Types of Interactions</li> <li>• PS3.A: Definitions of Energy</li> <li>• PS3.C: Relationships Between Energy and Forces</li> </ul>	<p><b>Unit 3: Adapt or Die?</b> <i>Why do species change over time and should we intervene?</i></p> <ul style="list-style-type: none"> <li>• ESS1.C: The History of Planet Earth</li> <li>• LS3.A: Inheritance of Traits</li> <li>• LS3.B: Variation of Traits</li> <li>• LS4.A: Evidence of Common Ancestry and Diversity</li> <li>• LS4.B: Natural Selection</li> <li>• LS4.C: Adaptation</li> </ul> <p><b>Unit 4: Using Engineering &amp; Technology to Sustain Our World-</b> <i>How are humans harming Earth, plants, and animals, and what can we do about it?</i></p> <ul style="list-style-type: none"> <li>• ESS3.C: Human Impacts on Earth Systems</li> <li>• LS4.B: Natural Selection</li> <li>• PS4.A: Wave Properties</li> <li>• PS4.B: Electromagnetic Radiation</li> <li>• PS4.C: Information Technologies</li> <li>• ETS1.A: Defining and Delimiting Engineering Problems</li> <li>• ETS1.B: Developing Possible Solutions</li> </ul>