

## ENVIRONMENTAL SYSTEMS PROGRAM

### I.- GENERAL COURSE INFORMATION

**ACADEMIC LEVEL:** B1.1

**AREA:** Science – International Baccalaureate

**GRADE:** Second Baccalaureate IB

**ACADEMIC YEAR:** 2021 - 2022

**TEACHER:** Nathan Marquez C.

**ACADEMIC PROFILE:** Environmental science is the study of patterns and processes in the natural world and their modification by human activity. To understand current environmental problems, we need to consider physical, biological and chemical processes that are often the basis of those problems. This course will give the students the skills necessary to address the environmental issues we are facing today by examining scientific principles and the application of those principles to natural systems. This course will survey some of the many environmental science topics at an introductory level, ultimately considering the sustainability of human activities on the planet.

Environmental impacts on Earth come from the number of people and the amount and types of resources that they use. By applying scientific principles and considering real-world examples, by the end of the school year students will be able to examine:

- The field of environmental science and how to think like an environmental scientist
- The human population and the ways in which changes in the population affect the environment
- Agriculture, soils and the environmental implications of eating meat, vegetables, local, organic, sustainable, industrial and other types of food
- Biodiversity and global change, which are the integrating units of environmental science

### II.- CONTENT

OVERVIEW UNIT	DATE
<p><b>- An introduction and overview to Environmental Studies –</b></p> <ul style="list-style-type: none"> <li>✓ <b>Case study</b></li> <li>✓ Why study the environment?</li> <li>✓ What is Environmental studies?</li> <li>✓ Environmental thought.</li> <li>✓ The triple bottom line.</li> <li>✓ Tragedy of the commons.</li> </ul>	<p>May – June</p>

<p><b>Chapter 1 – Ecosystems and ecology – Ref. Chapter 02</b></p> <ul style="list-style-type: none"> <li>✓ Introductory Lesson: How do Scientists study ecosystems and Origins of ecology.</li> <li>✓ Lesson 1: Species and populations.</li> <li>✓ Lesson 2: Communities and ecosystems.</li> <li>✓ Lesson 3: Flows of energy and matter.</li> <li>✓ Unit's Quiz.</li> <li>✓ Unit's project</li> </ul> <p style="text-align: center;"><b>Mid -Term Exam</b></p>	June - July
<p><b>Chapter 1 – Ecosystems and ecology – Ref. Chapter 02</b></p> <ul style="list-style-type: none"> <li>✓ Lesson 4: Biomes, zonation and succession.</li> <li>✓ Lesson 5: Investigating ecosystems.</li> <li>✓ Lesson 6: What is Ecology?</li> </ul> <p><i>: Investigating Ecosystems I.</i></p> <ul style="list-style-type: none"> <li>✓ Studying ecosystems.</li> <li>✓ Identifying organisms in Ecosystems.</li> </ul> <p>Measuring abiotic components of the ecosystem.</p> <ul style="list-style-type: none"> <li>✓ Lesson 7: What keeps us and other organisms alive? ✓</li> <li>Lesson 8: What are the major components of an ecosystem? ✓</li> <li>Lesson 9: Plant and animal adaptations and interactions with the environment.</li> <li>✓ Unit's Quiz.</li> <li>✓ Unit's project.</li> </ul> <p style="text-align: center;"><b>Mid -Term Exam</b></p>	June - July

<p><b>Chapter 2 – Biodiversity and conservation – Ref. Chapter 03</b></p> <ul style="list-style-type: none"> <li>✓ Core Case Study</li> <li>✓ Lesson 1: An introduction to biodiversity.</li> <li>✓ Lesson 2: Origins of biodiversity.</li> <li>✓ Lesson 3: Threats to biodiversity.</li> <li>✓ Lesson 4: Conservation of biodiversity.</li> <li>✓ Unit's Quiz.</li> </ul> <p><b>Chapter 3 – The rise of conservation biology –</b></p> <ul style="list-style-type: none"> <li>✓ Introductory lesson: Conservation biology</li> <li>✓ Lesson 1: Selecting protected areas.</li> <li>✓ Lesson 2: Design and management of protected areas. ✓ Lesson 3: Protecting species. In situ conservation</li> <li>✓ Lesson 4: Protecting species. Ex situ conservation and reintroduction.</li> <li>✓ Unit's project.</li> </ul> <p style="text-align: center;"><b><i>Review and examination week</i></b></p>	<p>August – September</p>
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<p><b>Chapter 4 – Foundations of ESS – Ref. Chapter 01</b></p> <ul style="list-style-type: none"> <li>✓ Core Case Study</li> <li>✓ Lesson 1: Environmental value systems.</li> <li>✓ Lesson 2: Systems and models.</li> <li>✓ Lesson 3: Energy and equilibria.</li> <li>✓ Lesson 4: Sustainability.</li> <li>✓ Lesson 5: Humans and pollution.</li> <li>✓ Unit's Quiz.</li> <li>✓ Unit's project.</li> </ul> <p style="text-align: center;"><b><i>Mid - Term Exam</i></b></p>	<p>October – November</p>
<p><b>Chapter 5 – Water, aquatic food production systems and societies – Ref. Chapter 04</b></p> <ul style="list-style-type: none"> <li>✓ Lesson 1: Introduction to water systems.</li> <li>✓ Lesson 2: Access to fresh water</li> <li>✓ Lesson 3: Aquatic food production systems.</li> <li>✓ Lesson 4: Water pollution.</li> <li>✓ Unit's Quiz.</li> <li>✓ Case Study.</li> </ul> <p style="text-align: center;"><b><i>Mid - Term Exam</i></b></p>	<p>November - December</p>

<p><b>Chapter 6 – Soil systems, terrestrial food production systems and societies – Ref. Chapter 05</b></p> <ul style="list-style-type: none"><li>✓ Lesson 1: Introduction to soil systems.</li><li>✓ Lesson 2: Terrestrial food production systems.</li><li>✓ Lesson 3: Soil degradation and conservation.</li><li>✓ Unit's Quiz.</li><li>✓ Unit's Project.</li></ul> <p style="text-align: center;"><b><i>Review for evaluation week</i></b></p>	<p>January – February</p>
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