

## AP Biology 11

### **Unit 1 – Ecology**

***Learning Goals: What kind of interactions can organisms have between each other and their environment?***

#### Concept 1: Analyzing Animal Behaviour

##### **Animal Behaviour (Ch 51)**

- The difference between kinesis and taxis
- Various forms of animal communication
- The role of altruism and inclusive fitness in kin selection

##### ***The AP Laboratory***

##### **Lab 11: Animal Behaviour**

- Some animal behaviours, such as orientation behaviour, agnostic behaviour, dominance display, or mating behaviour, and how they are adaptive
- How to design a controlled experiment

#### Concept 2: Ecology and Biosphere – Analyzing biome formation and characteristics

##### **An Introduction to Ecology and the Biosphere (Ch 52)**

- The role of abiotic and biotic factors in the formation of biomes
- Features of freshwater and marine biomes
- Major terrestrial biomes and their characteristics

#### Concept 3: Population Ecology – Analyzing density, dispersion, demographics, growth, and factors that affect growth.

##### **Population Ecology (Ch 53)**

- How density, dispersion, and demographics can describe a population
- The differences between exponential and logistic growth models of population growth
- How density-dependent and density-independent factors can control population growth

#### Concept 4: Community Ecology – Analyzing the interactions and relationships within and between species and the effects of environmental factors on species diversity and composition.

##### **Community Ecology (Ch 54)**

- The difference between a fundamental niche and a realized niche
- The role of competitive exclusion in interspecific competition
- The symbiotic relationships of parasitism, mutualism, and commensalism
- The impact of keystone species on community structure
- The difference between primary and secondary succession

#### Concept 5: Ecosystems – Analyzing productivity, energy flow, and chemical cycling.

##### **Ecosystems (Ch 55)**

- How energy flows through the ecosystem by understanding the terms that relate to food chains and food webs
- The difference between gross primary productivity and net primary productivity
- The carbon and nitrogen biogeochemical cycles

##### **Lab 12: Dissolved Oxygen and Primary Productivity**

- Factors that affect the amount of oxygen available in an aquatic ecosystem
- The relationship between dissolved oxygen, photosynthesis, respiration, and how these processes relate to primary productivity
- How to measure primary productivity based on change in dissolved oxygen
- The effect of changing light intensity on primary productivity

Please visit our Class Website ([www.mswood.weebly.com](http://www.mswood.weebly.com)) for the Timeline of our Unit.

## Connecting to the Themes of AP Biology

The two main goals of AP Biology are to help you develop a conceptual framework for modern biology and an appreciation of science as a process. The eight main themes are an important way of connecting the topics together. Use the following chart to connect the topic to the overlying themes.

<ul style="list-style-type: none"><li>○ <b>Science as a Process</b> Science is a way of knowing. It can involve a discovery process using inductive reasoning, or it can be a process of hypothesis testing.</li></ul>	<ul style="list-style-type: none"><li>○ <b>Evolution</b> Evolution is the biological change of organisms that occurs over time and is driven by the process of natural selection. Evolution accounts for the diversity of life on Earth.</li></ul>
<ul style="list-style-type: none"><li>○ <b>Energy Transfer</b> Energy is the capacity to do work. All living organisms are active (living) because of their abilities to link energy reactions to the biochemical reactions that take place within their cells.</li></ul>	<ul style="list-style-type: none"><li>○ <b>Continuity and Change</b> All species tend to maintain themselves from generation to generation using the same genetic code. However, there are genetic mechanisms that lead to change over time, or evolution.</li></ul>
<ul style="list-style-type: none"><li>○ <b>Relationship of Structure to Function</b> The structural levels from molecules to organisms ensure successful functioning in all living organisms and living systems.</li></ul>	<ul style="list-style-type: none"><li>○ <b>Regulation</b> Everything from cells to organisms to ecosystems is in a state of dynamic balance that must be controlled by positive or negative feedback mechanisms.</li></ul>
<ul style="list-style-type: none"><li>○ <b>Interdependence in Nature</b> Living organisms rarely exist alone in nature.</li></ul>	<ul style="list-style-type: none"><li>○ <b>Science, Technology, and Society</b> Scientific research often leads to technological advances that can have positive and/or negative impacts upon society as a whole.</li></ul>