Ecology Unit Learning Objectives

* Population growth: exponential growth, logistic growth, density-dependent and density-independent population limiting factors, carrying capacity.
* Use the math formulas for calculating exponential and logistic population growth.
* Three major survivorship curves that populations demonstrate (Type I, Type II, and Type III).
* Different life-history strategies: r vs. K strategies.
* Disruptions to an ecosystem’s homeostasis: human impact, invasive species, natural disasters and weather events.
* Human activities impact ecosystems on local, regional, and global scales.
  + Urbanization, deforestation, water pollution, introduced species and diseases, habitat destruction.
* Community formation and structure, species diversity.
* Species interactions: antagonistic interactions, mutualism, competition, commensalism, amensalism.
* Outcomes of species competition: competitive exclusion and resource partitioning. Fundamental niche vs. realized niche.
* Food chains and food webs are dependent on primary productivity via photosynthesis or chemosynthesis. Primary productivity (NPP = GPP – R).
* Energy and biomass pyramids, trophic levels, 1st and 2nd laws of thermodynamics, the flow of energy and the recycling of matter through an ecosystem, the 10% rule.
* Change in producer level will affect all other trophic levels.
* The diversity of species within an ecosystem influences the stability of the ecosystem.
  + Maintaining essential abiotic and biotic factors, keystone species.
  + Primary and secondary succession.
* Water, carbon, nitrogen, and phosphorous all cycle through the environment; biogeochemical cycles.