BSES ECOLOGY PROGRAM LEARNING OUTCOMES - Integrative Biology

OVERVIEW OF ECOLOGY MAJOR
This program provides a solid foundation in the principles of ecology, training in both pure and applied aspects of ecology and an introduction to economic, legal and policy issues related to the management of the environment. From the 2nd year on, students increasingly augment the core in ecology and policy with extensive restricted electives choices that allow the student to tailor the program to their interests. The major provides a sound science background for careers in conservation, resource management, ecological consulting, or nature interpretation used in teaching, government, non-government or the private sector; or for further post-graduate training in fundamental ecology, environmental biology and environmental management or policy.

Undergraduates can enroll in either the regular Ecology major (BSES.ECOL) or the Co-op program (BSES.ECOL:C). These majors have the same learning outcomes, with the exception that students in ECOL:C will gain practical experience with ITEMS #6, 9 & 10 in public, private or non-profit work settings.

Undergraduates in other majors may also enroll in the ECOLOGY MINOR program, which has the same learning outcomes as the ECOLOGY major, with the exception that there is less emphasis on applications to conservation and management (ITEM #6) and more emphasis on evolutionary perspectives on ecological process (ITEM #4).

WHAT WE EXPECT OUR GRADUATES TO ACHIEVE OVER FOUR YEARS IN AN ECOLOGY MAJOR (OVER AND ABOVE THE EXPECTED LEARNING OUTCOMES COMMON TO ALL IB MAJORS):

Breadth & Depth of Understanding

1. Demonstrate a broad understanding of the processes that shape the distribution and abundance of organisms from the micro-habitat to the globe.

2. Recognize that the distribution of organisms is a product of positive and negative interactions within and across trophic levels, including competition, mutualism, predation, and parasitism.

3. Analyze interactions within the context of specific habitats and judge how the habitat shapes the distribution and abundance of species. Key factors that influence the habitat include climate, energy input, spatial/temporal complexity, and resource availability.

4. Evaluate the relationships among ecological interactions, habitat context and the evolution of organism form and function. Distinguish how the evolution of organism form and function influences ecological interactions and habitat tolerance and judge how ecological processes in turn shape the evolution of organism form and function.

5. Judge how organism function, habitat context and interactions within and across trophic levels influence the flow of energy and the movement and recycling of matter in communities and ecosystems.

6. Judge how ecological processes across all scales are affected by human activities, and apply basic ecological principles to meet societal resource management and conservation goals.

Scientific Technology & Techniques

7. Gain experience developing ecological hypotheses and designing observational and experimental studies in field and laboratory settings.

8. Gain experience with modeling, data collection techniques, and statistical analysis used to test ecological hypotheses.

9. Synthesize information from the primary scientific literature; logically interpret the results of original research in the context of established ecological knowledge.

10. Practice written and oral communication skills necessary to communicate research findings and interpretations to policy makers, scientists, stake holders and the general public.