Biology Program and Sustainability Pathway Learning Objectives
(Biology Program in black, Sustainability Pathway in green)

A: Scientific/Sustainability Literacy
A.1. Recognize, state or describe selected current consensus knowledge in a particular biology content area.
A.1.a. Apply core concepts of ecology relevant to environmental sustainability.
A.2. Recognize biology as an interdisciplinary science and integrate other disciplines into biology.
A.3. Recognize, state, or describe the experimental, observational or theoretical evidence (both pro and con) relevant to the current consensus knowledge in a particular biology content area.
A.3.a. Describe and evaluate methodologies/technologies used in modern conservation biology.
A.4. Appreciate organismal biodiversity from evolutionary, ecological and taxonomic perspectives and be able to place organisms and model experimental systems in the larger context of life on earth.
A.5. Demonstrate proficient library and computer skills for information gathering and analysis.
A.5.a. Summarize key literature, used in a chosen field, related to research approaches to sustainability issues.
A.6. Locate, manage and coordinate information gathered from multiple sources required to complete a specific task.
B: Scientific/Sustainability Research Enterprise as a Way of Knowing
B.1. Demonstrate skills in observation and comparison
B.2. Make predictions using previously acquired knowledge.
B.2.a. Predict environmental scenarios based on past and present trends.
B.3. Select the appropriate experimental system
B.3.a. Identify appropriate methodologies for environmental research and restoration.
B.4. Demonstrate proficient laboratory skills.
B.5. Apply mathematical and/or statistical reasoning to analyze data and interpret graphs.
B.6. Make inferences from data analysis.
B.7. Formulate, analyze and evaluate a scientific hypothesis.
B.8. Design and conduct an experiment, collect and analyze the data, interpret the results and format them in writing.
B.8.a. Apply methods to measure, monitor, and evaluate impacts of human activities on specific environments.
C: Analytical, Critical Thinking and Problem Solving Skills
C.1. Compare and interpret observations.
C.2. Identify unifying principles and repeatable patterns in biology.
C.2.a. Identify solutions for complex multi-faceted problems within paradigms of uncertainty and unpredictability
C.3. Analyze a scientific paper and determine whether its conclusions are

well supported.
C.3.a. Conduct a risk assessment of an environmental situation using interdisciplinary criteria.
C.3.b. Apply knowledge and understanding to action and commitment using change-agent strategies.
D. Communication and Interpersonal Skills
D.1. Communicate effectively (both orally and in writing) using the language and forms of biology appropriate for both a scientific and lay audience.
D.1.a. Communicate sustainability issues and principles clearly and precisely both orally and in writing.
D.2. Work together as a team.
D.2.a. Participate in an interdisciplinary team that builds consensus strategies, encourages participation of all members, and integrates ideas and perspectives of others.
D.3. Promote actions for positive change.
D.4. Engage in civic and community discourse and debate.
D.5. Apply strategies for cooperative conflict resolution.
D.6. Lead as well as follow.
E. Scientific/Sustainability Ethics
E.1. Practice science in an ethical context.
E.1.a. Make ethical decisions by incorporating responsibility to self, community, society, and environment.
E.2. Critically assess the implications of scientific knowledge in social context.
E.3. Explain impacts, trade-offs, feedback and unintended consequences of individual and collective actions on human and natural systems.
F. Sustainability Focus
F.1. Develop a working definition of sustainability and evaluate alternative definitions (e.g. UBC, Brundland, Natural Step, Triple Bottom Line)
F.2. Identify key concepts of sustainability (carrying capacity, limits to growth, ecological footprint, sustainable consumption, needs and rights, diversity)
F.3. Explain the historical context of sustainability
F.4. Explain systems thinking in relation to sustainability and apply a systems thinking approach that supports interconnections between environment, economy, and society (include trade-offs, feedbacks, and unintended consequences of actions both individual and collective).
F.5. Conduct a community-based (real world) project using academic knowledge in a collaborative academically diverse setting.
F.6. Assess how stakeholders engage in sustainable development issues (stakeholders include First Peoples, government agencies business, industry, NGOs, scientific and technological communities).
F.7. Identify spatial and temporal scales when considering social and natural systems (locally, regionally, and globally).
F.8. Explain the impacts of economic policy and cultural norms on sustainable consumption and healthy ecosystems.
F.9. Identify societal visions of the future and develop strategies and

evaluative techniques for realizing these goals.
F.10. Explain how concepts of sustainability are connected to issues of social justice, the environment, and the economy.
F.11. Critically reflect on the role, influence, benefits and limitations of science and technology where human activity and natural systems intersect.
F.12. Formulate personal lifestyle practices that align with sustainability values