



NIQB-IUSE QUANTITATIVE MODULE CURRICULUM MAP

COURSE		BIOL I (CELL & MOLECULAR)						OL II (EVOLUTION & ECOLOG)			GENETICS		CELL BIOLOGY				
		Intro to the Scientific Process	Cell Structure and Size	Solute Concentration and Osmosis	Cellular Respiration	Enzyme Kinetics	Cell Cycle Mitosis	Natural Selection	Hardy-Weinberg	Mendelian Genetics	Gene Linkage and Recombination	Enzyme Kinetics	Cytoskeleton	Diabetes	Nernst	Bad Data	Cell Signaling
MODULE		QUANTITATIVE GOAL															
1	Demonstrate quantitative numeracy and facility with the language of mathematics [SFFP1]	Explain dimensional differences using numerical relationships															
		Use dimensional analysis and unit conversions to compare results															
2	Interpret data sets and communicate those interpretations using visual and other appropriate tools [SFFP2]	Interpret appropriate graphical representations of data															
		Create an appropriate graphical representation of data+C10:C11															
		Identify different components of graphs															
3	Demonstrate proficiency with statistical analyses and make inferences [SFFP3]	Compute and interpret descriptive quantitative statistics															
		Apply statistical analyses to biological data sets															
		Calculate frequencies and probabilities of biological phenomena															
		Predict the effect of sample size on experimental outcomes															
4	Demonstrate facility with mathematical models of biological systems and be able to make inferences about natural phenomena [SFFP 5]	and non-linear relationships between biological quantities															
		between the dependent and independent variables in a model															
		Predict biological phenomena using mathematical models															
5	Apply algorithmic approaches and principles of logic (including distinction between cause/effect and association) to problem solving [SFFP 6]	hypothesis and design an experimental approach to test its validity															
		Distinguish correlation from causality															
		Critically evaluate if scientific conclusions from a study are warranted															
6	Use quantitative language to describe biological phenomena [Ruscetti, et al. (2018)]	Identify quantitative comparative statements															
		Create a written analysis of a graph															

KEY:

This competency is not a focus	
Low level of difficulty related to the quantitative	1
Medium level of difficulty related to the quantitative competency	1 to 2
High level of difficulty related to the quantitative	2
	3