Information Literacy in Introductory Biology

QuickTime™ and a decompressor are needed to see this picture.

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Abstract

The Department of Biology at the University of Kentucky is in the process of revising the curriculum for both the B.S. and B.A. in Biology. As part of the revision, the entire introductory biology lecture and laboratory course sequence has been revised. The traditional introductory biology wet labs have been replaced with an information literacy laboratory course. The primary goal of this course is to familiarize the student with the literature, genomic and proteomic databases available to modern biologists. In this course the students use ***Calibrated Peer Review*** to critically read, review and write about current biological research. They acquire genomic and proteomic data from public databases and compare specific sequences of proteins and genes to determine evolutionary relatedness of these genes and proteins. The format of this course and the results of the piloting of this course will be discussed.

Major Changes in B.S. in Biology

Additional calculus course
New introductory biology (2 lecture and 1 lab) sequence of courses
Embedded laboratory experiences in CORE courses

Major Changes in B.A. in Biology

New introductory biology (lecture and lab) sequence of courses
Embedded laboratory experiences in CORE courses
Addition of of required minor or 12 credit hour focused sequence of courses (do not have to be science related)
Reduced physics requirement
Reduced organic chemistry requirement (1 survey course instead of two organic courses with lab)
Fewer biology electives

BIO 155, INTRODUCTORY BIOLOGY LAB

Course Goals

The student will become aware of the literature, genomic and proteomic databases available to modern biologists

The student will be able to critically read the scientific literature.

The student will be able to review and critically write about current biological research.

The student will be able to acquire genomic and proteomic data from public databases.

The student will be able to compare specific sequences of proteins and genes to determine evolutionary relatedness of these genes and proteins.

BIO 155, Introductory Biology Lab

At the completion of the course, the student will be able to:

Write a critical review of the scientific literature

Write a scientific report.

Acquire genomic and proteomic data from public databases.

Analyze and compare protein and gene sequences.

Pilot BIO 155 Course / Fall 2009

100 students registered

26+ ACT score required

Students co-registered for BIO 148 (new introductory biology lecture course)

Student writing skills improved

Student critiquing skills improved

Course outline for BIO 155

Week 1:	Introduction to Lab and Calibrated Peer Review
Week 2	Simulation of DNA Sequence, Replication, Transcription and Translation From http://www.hhmi.org/biointeractive/dna/animations.html Write 500 word summary of simulations
Week 3:	Calibrated Peer Review of Summary
Week 4:	Introduction to PubMed, Google Scholar and ISI Web of Knowledge Databases Search strategies, citations and meaning of impact factors Provide a bibliography on RNA viruses
Week 5:	Introduction to BLAST Download sequence of protein, RNA and DNA of a particular gene
Week 6:	Introduction to Clustal W Create phylogenetic trees for genes identified in Week 5 at protein level
Weeks 7 & 8:	Create phylogenetic tree at RNA level
Week 9:	Create phylogenetic tree at DNA level Simulation of E. coli From http://www.hhmi.org/biointeractive/media/ecoli-lg.mov and http://www.hhmi.org/biointeractive/media/salmonella-lg.mov Write 500 word summary of simulations
Week 10:	Calibrated Peer Review of Summary, supported by literature
Week 11:	Simulation of Malaria http://www.hhmi.org/biointeractive/disease/animations.html http://www.hhmi.org/biointeractive/disease/malaria_anim/malaria-mosquito.html Write 500 word summary of simulations, supported by literature
Week 12:	Calibrated Peer Review of Summary
Week 13:	Isle Royale Simulation Write 500 word summary, supported by literature
Week 14:	Calibrated Peer Review of Summary