WGS 1001

3a. Major Pedagogies

The course requires students to use inductive and deductive reasoning to understand issues related to population growth, evolution, inheritance and the reasons underlying different types of human kin groups. The course also requires problem-solving approaches to understand some concepts, particularly in the genetics section. Although the course is a fairly large lecture course, which limits pedagogical options somewhat, active teaching using classroom discussion and group problem solving are employed wherever possible.

In addition, each of us in this team-taught course has developed our own pedagogical classroom strategies and out-of-class assignments to break the educational restrictions of the lecture format. A few examples include:

1. An in-class demonstration of DNA extraction from strawberries.
   This is a simple demonstration using mashed strawberries, shampoo (a detergent), salt and chilled alcohol, to extract visible strings of DNA from the strawberries. This demonstration serves to bring the idea of DNA from the realm of the distant and esoteric to the commonplace and understandable, and is an ideal starting point for a discussion of the chemical and biological properties of DNA.

   This play, written by LSU biochemist Vince Licata and directed by Trish Suchy of LSU’s Department of Communication Studies, explores the events surrounding the discovery of DNA using the words of the actual participants in this discovery to show how scientists make discoveries, as well as to teach some of the facts about DNA. The video was filmed during a performance in Spring 2009. This play is particularly appropriate for our class, because it is associated with a gender-related controversy regarding the degree to which the historical participants, particularly Rosalind Franklin, received due credit for their contributions. This play provides an excellent launching pad for class discussions on DNA, scientific discovery, and gender. A post-play audience survey by Drs. Licata and Suchy demonstrated a significant quantitative gain in understandings of the biology of DNA and the process of scientific discovery for audience members with no scientific background, in comparison to the control groups. The first example question below in the section on assessment (3b) is an example of how students are assessed for information and ideas resulting from seeing this play.

3. The video “Evolution: Constant Change and Common Threads,” produced by the Howard Hughes Medical Institute.

   Portions of this video are shown in class to illustrate key points about evolution. Two parts of the video are used. In the first segment, a population of black-coated mice has evolved on a recent lava flow in a southwestern desert. Beige mice inhabit the nearby beige-colored
4. Kinship Assignment

Students are asked to draw their own family tree for three generations, using anthropological symbols and conventions presented in class, giving kin terms and kin-types as defined in class. This exercise allows the student to apply the scientific metrics of biology and anthropology to the familiar real world of their family. In order to complete this assignment correctly, they must distinguish between the biological relationships identified by kin type from the cultural interpretation of those relationships, which include kin terms (e.g., “uncle” which does not distinguish between mother’s brother and father’s brother), and metaphorical kin (e.g., step-parents). It also provides a mechanism to bring home the ways in which real families differ from the stylized kinship diagrams.

3b Criteria for Assessment of the Success of WGS 1001 in achieving the General Education Competency Goal for Natural Sciences Courses

Natural Science General Education Competency Addressed:

*LSU graduates will be able to employ scientific and mathematical methods and technology in the resolution of laboratory and real-world problems.*

Assessment Goals:
We will assess the success of WGS 1001 with regard to meeting the above Natural Science Learning Objective as follows:
Selected multiple choice questions or questions with discrete answers from all exams will be used to assess the effectiveness of WGS 1001 with respect to our desired learning objective. We will sample ten to twelve questions drawn from the two exams. Student performance on these selected questions will be collated and presented as part of the Department of Women’s and Gender Studies reporting process associated with the University Assessment Matrix. After the end of the course, the faculty members teaching the course will meet and discuss student performance on the questions used for assessment, and will use these results to consider ways in which the course can be improved.

The genetics of coat color of the mice, the age of the fresh lava flow, the frequency of mutation producing a gene for the black coat, are all known, so the students can see how rapidly the population can evolve to adapt to the environmental change. Another part of the video uses a stickleback fish to demonstrate how genes that control individual development can produce major morphological changes relatively rapidly. Pelvic spines are an advantage in marine environments, making the fish hard to swallow for bigger fish, but a disadvantage in fresh water, making it easy for invertebrate predators to catch the sticklebacks. Rapid switching of morphology as environments switch from fresh and salt water, gives the students insight as to how limb loss in whales and snakes might have proceeded rapidly with changes in genes controlling embryonic development.