Course Proposal for the First Year Seminar

Name: April Hill

Department: Biology

Availability (Fall and/or Spring Term; one or two sections): Spring 2012 (two sections)

Approval of Department Chair:

Title: Personal Genomes

Description of Course Content/Theme: This course will examine the content of human genomes. We will try to understand what a genome can and can not tell us about our evolutionary past, about our current state, and about what might happen to us in the future. Students will be challenged to think about what they would do and what society might do with the information mined from personal genomes.

Briefly describe how the course will seek to achieve the five goals of the First Year Experience:

1. Expand students understanding of the world (e.g. state how the course will challenge students either to think about important questions and issues they may not have thought about before, or think about them in ways they have not thought about them). This course will expose students to new ways of thinking about their past and the evolutionary trajectory of their species. Many of the important issues arising from the endeavors to sequence the genomes of individual humans have yet to be imagined. Students in this course will spend time thinking about what life in this new genetic age will mean.

2. Enhance their ability to read and think critically (e.g. a preliminary list of books and articles for the course and exercises or pedagogical methods that will be used to improve critical reading and thinking). Students will first learn to “read” from the DNA sequence of human genomes using public databases of annotated genetic code (e.g., National Center for Biotechnology Information). This type of “reading” will require analysis of primary data. Students will also read a variety of articles and books that may include:
   - My Genome, My Self (Pinker)
   - My Genome, So What (Goffman)
   - Personal Genomes, The Case of Missing Heritability (Maher)
   - Personal Genomes: A Disruptive Personality, Disrupted (Nelson)
   - When Consent Gets in the Way (Taylor)
   - Misdirected Precaution (Prainsack et al.)
   - The Diploid Genome Sequence of an Asian Individual (Wang et al.)
   - Individual Genomes Diversify (Levy and Strausberg)
   - Genetic Testing: Care, Consent and Liability (Sharpe and Carter)
   - A Short Guide to the Human Genome (Scherer)
   - You 2.0: Closing the Genetic Gap (Duncan)
Exploring Genomes: Web-Based Bioinformatics Tutorials (Young et al.)
The Book of Genes and Genomes (Willard et al.)
Access to the Genome: The Challenge to Equality (Mehlman and Botkin)
Genomes and What to Make of Them (Barnes and Dupre)
Genome: The Autobiography of a Species in 23 Chapters (Ridley)

Additional exercises to improve critical reading and thinking will include comparing and contrasting the various positions of scientists, politicians, lawyers, humanists and other groups regarding usage of genomes. We will also practice evaluating science vs. pseudoscience as related to our topic.

3. Enhance students’ ability to communicate effectively in writing, speech, and other appropriate forms (e.g. describe the type and number of writing assignments students will complete, the opportunities students will have to develop their writing skills, the kinds of questions they will address, the ways in which they will be asked to communicate their ideas, and the type of feedback students will receive).

Students will write three or four short pieces and one larger research paper. At least two of their writing assignments (including the research paper) will require multiple drafts that include meetings with a peer-writing consultant and me. The short pieces will address questions about what a genome can tell us about the past, present, and future. The research paper will be synthetic and will also have an oral and multimedia component (e.g., podcast, Wiki).

4. Develop fundamentals of information literacy and library research. Make time on your syllabus for students to complete the required library workshop outside of class and at least one additional library-related assignment for the class. Indicate any additional ways in which students will make use of library resources.

Students will learn to use a variety of databases held by the library (e.g., Web of Science). Students will also learn to find relevant and reliable sources, which will be required for all of their written work. We will also learn to mine genomic databases for many types of information.

5. Provide the opportunity for students to work closely with a faculty mentor (e.g. Indicate specific efforts you will make to interact with each student, learn more about each student’s interests and abilities, and provide appropriate guidance for their intellectual growth.)

I will work closely with all of the students during frequent in class discussions, on a class project where some member (likely me) will register for the Personal Genome Project, and during one-on-one meetings about writing assignments and the research paper.

Briefly state your background for teaching this course:
My Ph.D. is in Human Genetics and I spent five years working on the official Human Genome Project (prior to the completed sequence of the first human genome). I continue to work on genome analysis (albeit in other animals), but my current work provides me with a distinct evolutionary perspective regarding the past of *homo sapiens*. 