The course proposal Anth 404 Evolution of Human Nature has been proposed as a course to fulfill the Natural Science and Quantitative Reasoning Course Requirement. This documents the College of Sciences evaluation of this proposal.

The first section analyzes the course in relation to the Guidelines for GE courses in the Social and Behavioral Sciences.

The second section outlines the concerns that the Biology and specifically the Evolutionary Biologist have on the content of this course as a course in Evolutionary Biology.

The yellow highlights indicate the areas that are represented in Anthro 404 and in the guidelines for Social and Behavioral Sciences courses.

1. **Evaluation of Anthropology 404 in relation to guideline of Social and Behavioral Sciences.**

Guidelines B. SOCIAL AND BEHAVIORAL SCIENCES
The Social and Behavioral Sciences focus on human behavior, cognition, and organization from anthropological, economic, geographic, linguistic, political, psychological and sociological perspectives. Students gain an understanding of society and culture, as well as individual and social interaction processes. Disciplines within the Social and Behavioral Sciences employ the scientific method and utilize both quantitative and qualitative techniques to analyze the diversity and complexity of human experience. Through interdisciplinary learning, students explore the relationships between human societies and the physical environment.
Goals for GE Courses in the Social and Behavioral Sciences

- Goal 1: Explore and recognize basic terms, concepts, and domains of the social and behavioral sciences.
- Goal 2: Comprehend diverse theories and methods of the social and behavioral sciences.
- Goal 3: Identify human behavioral patterns across space and time and discuss their interrelatedness and distinctiveness.
- Goal 4: Enhance understanding of the social world through the application of conceptual frameworks from the social and behavioral sciences to first-hand engagement with contemporary issues.

From the Syllabus of Anthropology 404:
"The goal of this course is to explore and understand Human Behavior: human sexuality, male-female relations, reciprocity and cooperation, parent-child relations, kinship and the family, risk-taking and aggression, and human health and survival."
See also highlighted sections of the Syllabus document.

In the justification document the instructor states:

"Evolutionary approaches to human behavior, what anthropologists sometimes call 'evolutionary anthropology' have had significant impacts on the development of each of anthropology's sub-fields."

"The course also introduces important theoretical concepts that are relevant to a number of social science disciplines such as psychology and sociology. "

These statements strongly suggest that this is a Social Science and Behavior class and not a natural science course.

Evaluation of the placement of Anthropology 404 as a GE course:
It is important to note that the goal of this class is to understand aspects of human behavior, culture, and society. These goals are well within the guidelines of Social and Behavioral Sciences GE courses. Further, in the guidelines for Social and Behavior Science classes it clearly states that: "Disciplines within the Social and Behavioral Sciences employ the scientific method and utilize both quantitative and qualitative techniques to analyze the diversity and complexity of human experience." Therefore, the fact that the instructor will be taking an "evolutionary "or scientific approach to human behavior does not de facto make this a science course. The purpose, as stated in the syllabus, is to understand variation in social behavior, culture, family structure, and other aspects of human relations. As such this course clearly lies centrally within GE area B: Social and Behavioral Sciences.

When the learning outcomes and lecture topics of the proposed Anthro 404 are examined in detail it is clear that the learning outcomes are closely allied with the goals of GE courses in the Social and Behavioral Sciences.

The first learning objective of Anth 404 is to characterize: human behavioral ecology, evolutionary psychology, and evolutionary cultural anthropology. This objective is allied with the Social and Behavioral Goal #1 "Explore and recognize basic terms, concepts, and domains of the social and behavioral sciences.".

The second learning objective is to compare and contrast among the concepts listed above. This also applies to the Social and Behavioral Goal #1 and Goal 2: Comprehend diverse theories and methods of the social and behavioral sciences.

The other Anth 404 learning objectives 3-5 are aligned to
Social and Behavioral Goal 3: Identify human behavioral patterns across space and time and discuss their interrelatedness and distinctiveness.

2. Evaluation of Anthroplogy 404 by Evolutionary Biology Faculty:

The proposal suggests that the instructor will incorporate an evolutionary perspective, but it does not appear that the course will include enough biology (specifically, evolutionary biology) to qualify as a GE course in the sciences. Like other sciences, evolutionary biology is built on a foundation of observations from nature, analytic techniques and theory. Process-base interpretation of natural patterns derives from the analyses and theoretical principles specific to this field. Students educated without this full context will complete the course with a biased view of evolutionary biology, rather than a full understanding as required for a GE course in the Natural Sciences.

Here is a partial list of the concerns that the faculty in Evolutionary Biology in the College of Sciences have with this proposed course.

1. The course does not provide a complete understanding of Evolutionary Biology. The assignment of the three pages from the Berkeley web site is highly inadequate.

2. The "Evolutionary" approach presented in this class seems to present biological evolution as synonymous with adaptation via natural selection. Natural selection is but one of the five evolutionary forces that determine patterns of variation within and among species. For example, no information is provided on the very important role of Random Genetic Drift in shaping genetic variation.

   The practice of interpreting biological patterns only through the lens of adaptation has been labeled the "Adaptionist program". For four decades, biologists have recognized the folly of this approach. The phrase "The Fallacy of Intuitive Evolutionary Thinking" has also been used to describe the assumption that every biological feature has been optimized by selection. Evolutionary biologists accept the power of Darwinian natural selection but we do so understanding that natural selection is a complex process.

3. As an example, one of the readings : Pitchford, I. (2001). The origins of violence: Is psychopathy an adaptation. The Human Nature Review, 1, 28-36. http://www.friedgreentomatoes.org/articles/Origins_of_Violence.php states that "Primary sociopathy is thus a frequency-dependent adaptation"

4. There is no discussion of the Neutral and Nearly Neutral models of Evolution, which have been the dominant models of molecular evolution for 50 years.

5. It is also well established that *Homo sapiens* has an effective population size (Ne) of approximately 10,000. With such a small effective population size it is widely understood (among evolutionary biologists) that selection is inefficient in *H. sapiens*. Because of this evolutionary biologists would expect to see high levels of both fixed and segregating neutral and nearly neutral (slightly deleterious) alleles within and between

human populations. Our most current understanding of genetic variation in does not fit in to the pan selectionist approach presented in this class.

6. Other examples of basic misunderstanding about evolutionary principles are also present in the syllabus. For example, the syllabus states that "natural selection vs sexual selection" will be discussed. Natural selection and sexual selection are not mutually exclusive. Sexual selection is a subset of natural selection.

7. There is no discussion of how hard selective sweeps within early humans (of which there are a number of examples) will impact the distribution of neutral or deleterious "hitchhiking mutations" i.e. there is no discussion of levels of linkage disequilibrium within Homo sapiens. When linkage disequilibrium is high it can be hard to disentangle the selected mutation and those mutations that are linked to that mutation because they are on the same chrososome.

As faculty from biology, we understand that we are ill-informed to teach courses in other fields, such as those in the social sciences. But this course does not represent the science of our field, and our students should not receive GE Natural Sciences credit for it.