**Rationale for *The Living Primates* (ANT 3304) as a Natural Science (Biological Science) GE course.**

**Question:** Why does this course qualify for GE status in the Natural Science (Biological Science)?

This course is a hypothesis driven introduction to the key morphological and behavioral adaptations of the primates. The objectives are twofold: (1) to introduce students to the diversity of living primates using an explicitly evolutionary approach and, (2) to use primates as the platform for introducing the scientific method and for illustrating how major concepts in evolutionary biology are applied to research, discovery, and problem solving. Most undergraduates - including those pursuing non-scientific fields of study - have some familiarity with living primates (lemurs, monkeys, and apes) so these charismatic animals provide an excellent entry to core concepts in the natural (biological) sciences.

The course is constructed around five general questions: (1) What are primates and how do they differ from other mammals? (2) What are the major morphological and behavioral features that distinguish each primate group and what methods are used to collect the requisite data? (3) What factors (adaptations) account for the taxonomic diversity among primates? (4) In what ways are human primates similar to and different from non-human primates? (5) What is the future of living primates and how might we best conserve them? In the course of answering these questions, students are introduced to a variety of scientific topics and methods including: hypothesis testing, adaptation and natural selection, principles of classification and taxonomy, size and scaling, cladistics, biogeography, comparative anatomy, evolution of social systems, reproductive strategies, kin selection and altruism, evolution and geological time, etc. There is insufficient time to cover any one of these topics in great depth and it is not the purpose of the course to transform every student into a primatologist; however, by surveying the diversity of scientific approaches brought to bear on exploring a single biological radiation (which also include *Homo sapiens*), students learn how the scientific process works as well as it’s outcomes.

NB: This course is already approved as a core course within the **Evolutionary Studies** minor. It is also a physical anthropology elective within the Anthropological Sciences (BS) and Anthropology (BA) majors.

**Specific Learning Outcomes of Natural Science (Biological Science) courses.**

**(1) Students understand the basic facts, principles, theories and methods of modern science.**

Response: The course takes an explicitly evolutionary approach to examining the diversity and relationships within the primate order. Phylogenetic (family) trees are hypotheses accompanied by multiple questions: we address the questions and data that are used to generate them as well as those data that have overturned earlier answers. In so doing, students are introduced to the methodological approaches and idiosyncrasies used by primatologists across a variety of sub-disciplines (e.g., comparative anatomists, behaviorists, psychologists, veterinarians, conservationists) at a variety of levels. The dynamic and self-correcting nature of science is highlighted.

**(2) Students understand key events in the development of science and recognize that science is an evolving body of knowledge.**

Response: Our survey begins with a discussion of how Greek taxonomists (e.g., Aristotle) viewed primates, moves through the Ages of Exploration (when exotic animals were often viewed as monsters) and Europe’s Golden era of Natural History (the filling of museum drawers), and concludes with examples of how cutting edge methodologies (DNA sequencing, cloning, GIS, disease control, etc.) are used to address current problems such as the identification of cryptic clades, viruses (Ebola) resulting from the bush meat trade, and preservation of endangered species.

**(3) Students describe the inter-dependence of scientific and technological developments.**

Response: As noted above, one of the major goals of the course is to illustrate how cutting edge technology is being used to examine questions in primate biology. Examples of these methods/applications include morphometric analyses of bones and teeth, basic biomechanics, molecular (e.g., genetic) primatology, use of primates in HIV research, cognitive (psychological) primatology, population management, use of GIS in primate conservation biology, etc.

**(4) Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.**

Response: Primates are a fascinating group that includes our distant cousins and closest extant sister taxa. They are also a group of contrasts. In some cultures, primates are considered evil and filthy, whereas in others they are revered as deities. There is ample evidence that apes have a sense of being and that many primates – even some monkeys – show evidence of culture and higher-level thinking. Struggling farmers in the developing world regard crop-raiding monkeys as threats to their livelihood, while millions of dollars are donated annually for conservation efforts in the same parts of the world. To many persons, the thought of being related to monkeys is abhorrent and repulsive; others take comfort knowing there are nonhuman relatives still evolving in the forest. Of utmost importance is the realization that over half of all primate species are in danger of extinction and that one primate – us – is responsible for this mass exodus. All these issues raise significant ethical/philosophical issues (e.g., *Are we justified confining cognizant chimpanzees in solitary cages, even if it means achieving a breakthrough in AIDS research?*) and in this class, we shy away from discussing none of them.