Introductory Animal Science
Animal Sciences 200
GEC Natural Sciences Category
Biological Science course

I. Goals and Objectives:

A. The Introductory Animal Sciences course meets the general principles of the GEC Model Curriculum and Goals of the Natural Science Biological Sciences course GEC category as follows:
Courses in natural science foster student's understanding of the principles, theories, and methods of modern science, the relationship between science and technology, and the effects of science and technology on the environment.

- Introductory Animal Sciences utilizes a biological systems based approach to equip a broad range of students with the knowledge and critical thinking skills required to address questions concerning the survival, adaptation, and performance of domestic animals utilized for human benefit. Basic principles of animal biology including cell theory, genetic basis of inheritance, molecular basis of form and function, and organ system integration are taught with an emphasis on food animals and equine. The contribution of animals toward advancements in agriculture and medical biotechnology are presented, as well as the local and global impacts of the application of new biotechnologies to the animal industries and the impacts of the animal industries on society and the environment.

B. The proposed Introductory Animal Sciences course fulfills the Learning Objectives of the Natural Science GEC category as follows:

1. To understand the basic principles and central facts of the physical and biological sciences, and their interrelationships.

- Introductory Animal Sciences embodies fundamental concepts in areas of genetics, reproduction, physiology, nutrition, behavior, and biotechnology as they apply to animals kept for human benefit. Students are introduced to the molecular and cellular mechanisms that underscore the function of biological systems and how knowledge in this area is applicable toward advancement of domestic animals.

2. To understand when, where, and how the most important principles and facts were discovered, thus understanding the key events in the history of science both as events in human history and as case studies on the methods of science.

- Basic concepts of modern science that are explored in Introductory Animal Sciences are presented in a historical context. Students are introduced to a timeline of early discoveries and influential men and women involved in the advancement of the field. For example, for students to appreciate the role of science and technology in advancing knowledge in assisted reproductive therapy, students are presented with key discoveries including the first visualization of sperm by Leeuwenhoek and Hamm in 1678. The importance of this discovery and its implications toward current methods of embryo transfer are highlighted. A similar approach is used for each of the primary disciplines introduced in the course.

3. To understand the interaction between science and technology.

    - The role of scientific knowledge in improving technology for optimal performance of animals maintained in captivity is an important aspect of the course. Accordingly, students are introduced to the importance of biotechnology for advancing the health and well-being of animals, including humans.

4. To understand the social and philosophical implications of major scientific discoveries.

    - As students learn basic scientific concepts and discover the impact of rapid advancements in science on animal health and well-being, the impact of scientific discoveries in the context of social and ethical perceptions is explored. The role of social perception in scientific progress is highlighted as well as the role of an individual's ethics in guiding the acceptance or rejection of advancements in the field.

## II. Assessment Plan

Our goal is that students who satisfactorily complete this course will be knowledgeable, skilled, and reflective with an ability to critically evaluate concepts in science. Students will appreciate the molecular, cellular, and physical underpinnings of animal form and function and will be familiar with the historical, social, and biological contexts within which a framework for the study of animals has evolved. They will have the opportunity, through this course, to develop innovative approaches to, and solutions of, problems encountered when maintaining animals for human benefit.

Assessment will include students' knowledge and their ability to integrate that knowledge in problem solving. Through the use of examination, essay and monitored discussion (see below), instructors will be able to evaluate students' progress toward the goals outlined above and will adjust teaching tools and methods as needed during the course. In addition, the effectiveness of the instructors will be evaluated by peers experienced in educational pedagogy as well as by the students themselves (see below). Adjustments will be made as indicated by these sources of assessment to improve comprehension and achievement of learning objectives. Finally, the course content will be assessed before each offering to validate that it is current and applicable to the goals outlined above (see below).

### 1. Student Assessment:

- Students will be assessed for comprehension and application of the information base of the material through three examinations. Multiple choice and short answer questions will be used to evaluate students' understanding of fundamental principles and their ability to apply it to practical issues. Essay-type questions will assess the students' ability to integrate the knowledge acquired and apply it to appropriate issues, chosen from a selection of topics provided by the course instructor.
- Students will develop a series of essays that expand their knowledge and comprehension of the biological processes which support the success of a selected animal in its domestic or captive environment. Students are required to select an animal that has been domesticated, in the process of domestication, or maintained in captivity and address the importance and benefit to man, behavior, reproduction

and breeding practices, and nutrition. Each short essay must be supported by scientific literature to develop a well-balanced, objective two page paper on the topic. Evaluation by the instructor of each essay will provide constructive assessment and suggestions for improvement prior to a final submission of each topic in an integrative paper.

- Students will be assessed routinely for their comprehension of issues raised during the lectures through individual and group activities. Hypothetical scenarios and case studies will be provided for student analysis and interpretation utilizing concepts learned in class. In addition, each week students will be required to submit a question or comment regarding lecture material covered during the previous week. Responses will be monitored for student understanding of key concepts. Ten percentage points of a student's final grade will be awarded for participation in these activities.

2. Course Instructor Assessment:

Through Peer Evaluation of Instruction by faculty members in the Department of Animal Sciences and utilization of the University Student Evaluation of Instruction (SEI) instrument, the instructors will be evaluated on an ongoing basis to assure that the goals of the course are met and that educational pedagogy is implemented.

3. Course Assessment:

By its nature, the content of this course will require ongoing evaluation and updates to keep current with rapidly advancing scientific fields. The reading list will be evaluated and new articles of interest will be added. In addition, the group exercises will be assessed for effectiveness in enhancing the students' integration of the course materials, and will be adjusted as needed.