

693 A practicum-based course in equine parturition for undergraduate students. P. L. Ryan*, D. L. Christiansen, R. M. Hopper, S. T. Willard, S. D. Bowers, T. W. Dickerson, and G. L. Olsen, *Mississippi State University, Mississippi State.*

The objective of this exercise was to develop a practicum-based pilot course to instruct undergraduate students interested in equine reproduction with specific emphasis on the pregnant mare, parturition and post-natal foal. The course was offered as a Special Topics in Animal Science, but open to students from across campus with an interest in the equine species. Forty three students enrolled (4 freshman, 10 sophomore, 8 junior and 21 senior) representing six majors. The course offered a weekly lecture and six nights of foal-watch duty for a total of two credit hours. Students worked in pairs, assisted with the birth process and performed the post-partum treatments of the foal. Students were required to maintain detailed records in the foal-watch log book of activities related to mare behavior, udder development, time of delivery, time from delivery to foal standing and suckling, and whether there were complications (i.e., dystocia). For credit, students had to complete six nights of duty, attend the weekly lecture and write a report on their experiences while on foal-watch duty. At the conclusion of the course, a course evaluation was conducted to assess student perceptions of the course as a whole. Evaluations were conducted on the basis of a 1 to 5 scale (1 = strongly disagree and 5 = strongly agree) and were analyzed to ascertain the value of lectures and the hands-on experience during foal-watch. Thirty six of the forty three students enrolled responded (83.7%). The course evaluation revealed that the students felt that the course was relevant to equine sciences (4.83 ± 0.07), that lectures complimented the practicum exercises (foal-watch; 4.50 ± 0.12), that they learned a lot from the course (4.17 ± 0.17), and that what they learned would have useful application later in life (4.64 ± 0.11). The students agreed that having more than one instructor team-teaching the course was good (4.28 ± 0.14) and students disagreed that the different teaching styles were distracting (2.11 ± 0.17). There was agreement (4.80 ± 0.12) that the pilot course should be recommended to the university curriculum committee for development as a practicum-based course in the equine sciences.

Key Words: Undergraduate, Teaching, Equine Practicum

694 Withdrawn by author. . .

695 Dairy management symposium training: Instructive partnership between academia and industry. A. Ahmadzadeh* and M. A. McGuire, *University of Idaho, Moscow.*

The traditional educational mechanism cannot provide adequate interaction with industry professionals for up-to-the-minute knowledge about dynamic changes within the dairy industry. The goal of the described educational activity was to provide complementary instruction in a senior level dairy management course to 1) enhance student knowledge and professional competencies for the progressive and challenging dairy industry and 2) to share knowledge and experience of institutional partners, producers, and allied industry experts. Through the semester, the team-taught course provided a foundation in dairy management. To achieve the goals, a mini-symposium occurred at the end of the semester.

Contemporary and Emerging Issues: Current and Future Prospects for Animal Nutrition Management for Environmental Impact Reduction

697 Use of mass balance techniques for nutrient excretion modeling. T. J. Applegate*¹ and R. Angel², ¹*Department of Animal Sciences, Purdue University,* ²*Department of Animal and Avian Sciences, University of Maryland, College Park.*

In the absence of comprehensive biological data on total excreted nutrients, development of models is needed to predict these values for livestock species. Models are usually constructed based on relationships that have been determined biologically and allow for estimation of undetermined values. Estimation of nutrient excretion has become necessary due to the recent emphasis on environmental management and regulation of animal feeding operations. Because of the impact that new environmental regulations will have on animal production it is important to determine if model estimates are accurately predicting biological nu-

trient excretion rates. The majority of current models for estimation of nutrient excretion have largely been derived from a process-based modeling approach, an approach that utilizes known analyses of components (feed analyses, tissue deposition and/or growth, product nutrient composition, average apparent retention, etc.). This mass-balance modeling approach has inherent errors, including: extrapolation of data to other ages, lack of input data for different feeding programs, and unknown referenced inputs for up-to-date industry feeding practices and productivity. Nevertheless, the mass balance approach has been critical in identifying gaps in the existing literature. Models utilizing multivariate least-squares regression may be developed in the future, but knowledge

Key Words: Interactive Learning, Cooperative Partnership, Allied Industry

696 Development of a distance education based food safety microbiology course in poultry science. R. S Hardin*, E. M Hirschler, M. M Kundinger, A. R Sams, and S. C Ricke, *Texas A&M University, College Station.*

With the increasing demand for food safety the responsibilities of food industry personnel has increased. More responsibility requires advanced training, which may not be readily available onsite. Distance education courses have become popular due to the increased number of commuter students as well as people already in the workforce who need more background on foodborne disease. In many cases the ability to physically attend a class at a university that offers such courses and academic expertise can be limited. Therefore a graduate level web based course entitled Special Topics-Poultry Food Safety Microbiology was developed from an existing senior undergraduate advanced food microbiology course in the Poultry Science Department at Texas A&M. Even though the use of the Internet as a teaching tool is becoming more prevalent, converting this course into a distance education course provides some unique challenges, to maintain comparable course content in an asynchronous manner. The overall objective for this course was to examine all aspects of foodborne bacterial activities including ecology in food, animals, raw and processed meat, eggs, and human pathogenesis. To create a graduate level learning experience for the students a research paper assignment was developed in order to provide a more in-depth learning opportunity of microbial pathogens. The writing process was completed through electronic submission of an outline, rough draft, and finally completing a fifteen-page scientific paper related to a food microbiology topic of interest. This instructional approach imparts an effective means for distance education students to extend an understanding of food microbiology.

Key Words: Food Safety, Distance Education, Poultry Science