

Topics in Stress, Behavior and Welfare

Measuring Farm Animal Behavior and Welfare

Course Objectives:

- To familiarize students with current and classic scientific literature in areas of:
 - Measuring farm animal behavior
 - Measuring and assessing farm animal welfare
- To give graduate students an opportunity to interact with graduate students with similar interests at different universities

Collaborating Institutions

Texas Tech University
University of Illinois
Iowa State University

Course Format

This course will meet on line and by video conference, if possible. Students will receive a reading list at the start of the semester. Students will prepare written summaries of the papers, and will be assigned parts of papers or whole papers to present to the group. Instructors will ask questions and students will prepare answers.

For each paper (or parts of papers, or set of papers, depending on the complexity of the papers), students will be assigned as a primary, secondary or tertiary reviewer. All students must read and be familiar with all papers. Instructors will provide questions about the papers before class. For a given paper, the responsibilities of student reviewers are:

Primary reviewer. This person first summarizes the paper. Including the major findings that are important. The primary reviewer sends their review to the secondary and tertiary reviewer, and the instructors 1 day before class meeting time. The primary reviewer supports the paper.

Secondary reviewer. This person identifies the weak points of the paper. This person sends their review to the primary and tertiary reviewer, and the instructors 1 day before class meeting time.

Tertiary reviewer. This person adds to or corrects the comments of the primary and secondary reviewer.

For a given topic (paper, part or a paper or collection of papers), the assigned students take a total of 5 minutes to summarize the paper as described above. Then the 3 assigned students will answer the instructor's questions for 5 minutes. Instructors will clarify and add to the discussion. Then, for the next 5 minutes, the entire class can comment on what has been said and on the instructor questions.

It is important that primary, secondary and tertiary students prepare information prior to class.

One instructor will lead the discussion, one will keep the group focused on the topic at hand, and one will be the time keeper.

Grading

Students will be graded in participation, abstracts, and 2 exams. Grades will be based on the

following points:

6 abstracts @ 25 points each 150
2 exams @ 100 points each 200
Participation 150

Total 500

90 % = A

80 % = B

70 % = C

60 % = D

< 60 % = F

Class schedule

Week 1	Feb 2	Week 7(midterm)	March 16 or 23
Week 2	Feb 9	Week 8	March 30
Week 3	Feb 16	Week 9	April 6
Week 4	Feb 23	Week 10	April 13
Week 5	March 2	Week 11	April 20
Week 6	March 9	Week 12 (final)	April 27

Topics

General theories of measuring farm animal welfare: Leader All

JM Week 1. Terminology

Broom, D. and K.G. Johnson. 1993. Approaching questions of stress and welfare. In: Stress and Animal Welfare. Kluwer Academic Publishers, pp 1-7

Fraser and Broom. 1997. Welfare terminology and concepts. In: Farm animal behaviour and welfare. CAB International. pp 256-265

AJ Week 2. Concepts of measuring welfare: physiology, behavior, performance and health.

Fraser, A. F. and D. M. Broom, 1997. Welfare Measurement. In: Farm animal behaviour and welfare. CAB International. pp 266-279

Gonyou 1986. Assessment of comfort and well-being in farm animals. J. Anim. Sci. 62:1769-1775.

Broom, D. M. 1991. Animal welfare concepts and measurement. J. Anim Sci 69: 4167-4175

Swanson, J. C. 1995. Farm animal well-being and intensive production systems. J. Anim. Sci. 73:2744-2751.

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

All Week 3. Alternative concepts of animal welfare: feelings, physiology, vocalizations, & asymmetry

Duncan, I. 1993. Welfare is to do with what animals feel. J. Ag & Appl Ethics 6:8-14. [feelings approach]

McGlone, J. 1993. What is animal welfare? J. Ag & Appl Ethics 6:26-36. [physiology approach]

White, RG, JA DeShazer, CJ Tressler, GM Borchert, S Davey, A Waninge, AM Parkhurst, MJ Milanuk, and ET Clemens. 1995. Vocal and physiological response of pig during castration with or without anesthetic. J. Anim Sci 73:381-386. [Vocalizations]

Tuytens, FAM, L Maertens, E Van Poucke, A Van Nuffel, S Debeuckelaere, J. Creve and L Lens. 2005. Measuring fluctuating asymmetry in fattening rabbits: A valid indicator of performance and housing quality. J Anim Sci 83:2645-2652.

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

JS Week 4. Measuring welfare over short and long periods

Broom DM, Johnson KG. 1993. Assessing welfare: short-term response. In: Stress and animal welfare. 87-110.

Broom DM, Johnson KG. 1993. Assessing welfare: long-term response. In: Stress and animal welfare. 111-144.

Mostl E, Palme R. 2002. Hormones and indicators of stress. Domestic Anim Endocrinol 23:67-74.

Measuring Behavior: Leader John McGlone

Week 5. Sampling methods

Altmann, J. 1974. Observational study of behavior. Behaviour. 49:227-267

No abstracts due.

Week 6. Time-lapse and validation of behavioral methods

Arnold Meeks, C. and J McGlone. 1986. Validating techniques to sample behavior of confined, young pigs. Appl Anim Behav Sci 16:149-155.

Mitloehner, F., J. Morrow-Tesch, S. Wilson, J. Dailey and J McGlone. 2001. Behavioral sampling techniques for feedlot cattle. J. Anim Sci 79:1189-1193.

STUDENTS FIND A RESEARCH PAPER THAT USES A GIVEN BEHAVIORAL MEASURE AND STUDENTS WILL WRITE AN ABSTRACT THAT INCLUDES ASSESSMENT OF THE SAMPLING METHOD

Week 7. Mid term Exam

Behavioral measures of farm animal welfare: Leader Anna Johnson

Week 8. Early reviews

Banks, E. M. 1982. Behavioral research to answer questions about animal welfare. J. Anim. Sci. 54:434-446.

Gonyou, H. 1994. Why the study of animal behavior is associated with the animal welfare issue. J. Anim. Sci. 72:2171-2177.

Broom, D. M., and K. G. Johnson. 2003. Stress and animal welfare. Pp 82-88.

Broom, D. M., and K. G. Johnson. 2003. Stress and animal welfare. Pp 130-144.

Week 9. Behavioral needs and motivation

Baxter, M. R. 1983. Ethology in environmental design for animal production. Appl. Anim. Behav. Sci. 9:207-220.

Dawkins, M. S. 1983. Battery hens name their price: Consumer demand theory and the measurements of ethological needs. Anim. Behav. 31:1195-1205.

Jensen, P., and F. M. Toates. 1993. Who needs “behavioural needs”? Motivational aspects of the needs of animals. *Appl. Anima. Behav. Sci.* 37:161-181.

Mason, G., and M. Mendl. 1997. Do the stereotypies of pigs, chickens and mink reflect adaptive species differences in the control of foraging? *Appl. Anim. Behav. Sci.* 53:45-58.

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

Physiological, performance and health measures of farm animal welfare: Leader Janeen Salak-Johnson

Week 10. Aspects of the Immune System and health as measures

Blecha F. 2000. Immune system response to stress. In: *The biology of animal stress: basic principles and implications for animal welfare.* Moberg GP, Mench JA (eds). CABI publishing, New York. pp 111- 121.

Davis SL. 1998. Environmental modulation of the immune system via the endocrine system. *Domest Anim Endocrinol* 15:283-89.

Berge ACB, Lindeque P, Moore DA, Sisco WM. 2005. A clinical trial evaluating prophylactic and therapeutic antibiotic use on health and performance of preweaned calves. *J Dairy Sci* 88:2166-77.

*Kanitz E, Tuchscherer M, Puppe B, Tuchscherer A, Stabenow B. 2004. Consequences of repeated early isolation in domestic piglets (*Sus scrofa*) on their behavioural, neuroendocrine, and immunological responses. *Brain Behavior Immunity* 18:35-45.

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

Week 11. Aspects of the Neuroendocrine System and Performance as measures

Matteri RL, Carroll JA, Dyer CJ. 2000. Neuroendocrine responses to stress. In: *The biology of animal stress: basic principles and implications for animal welfare.* Moberg GP, Mench JA (eds). CABI publishing, New York. pp 43-76.*

Kanitz E, Tuchscherer M, Puppe B, Tuchscherer A, Stabenow B. 2004. Consequences of repeated early isolation in domestic piglets (*Sus scrofa*) on their behavioural, neuroendocrine, and immunological responses. *Brain Behavior Immunity* 18:35-45.

Abeni F, Calamari L, Calaza F, Speroni M, Bertoni G, Pirlo G. 2005. Welfare assessment based on metabolic and endocrine aspects in primiparous cows milked in a parlor or with an automatic milking system. *J Dairy Sci* 88:3542-52.

Smith RF, Dobson H. 2002. Hormonal interactions within the hypothalamus and pituitary with respect to stress and reproduction in sheep. *Domestic Animal Endocrinol* 23:75-85.

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

Week 12. Final Exam April 27th 8:00-9:30 am

Class Schedules

Item	Texas Tech	U Illinois	Iowa State
Classes start	Jan 11	Jan 17	Jan 9
Spring break	March 13-17	March 20-24	March 13-17
Last class	May 2	May 3	April 28