COURSE SYLLABUS

Food and Feed Safety
CVM 7060
2 Credit Hours (2-week course)

Course Leader: John Tegzes, MA, VMD, Dipl. ABVT; Professor, Toxicology
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Course Instructors: Musafiri Karama, DVM, PhD; Teresa Morishita, DVM, PhD, Dipl. ACPV; Peggy Schmidt DVM, MS, Dipl. ACPVM; Ron Terra, DVM, MBA, Dipl. ABVP

Course Time and Location:

The first day of class will convene on Monday morning at a time and location identified by the course director and communicated to students via email at least 48 hours prior. The course syllabus will be discussed and the course schedule finalized, including the times and locations of group meetings.

Field trips and other selected activities to enhance the learning opportunities will be planned on the first day of class and may include visits to livestock markets, slaughter/processing plants, feed manufacturers, and food processing plants.

Course Description: (Course Purpose, aims/goals)

The primary aim of this course is to provide students with the basic knowledge regarding the role of veterinary medicine in the production of safe foods of animal origin (meat, dairy products, and eggs) and safe feeds for companion animals, poultry, livestock, and other species. The continuum from pre-harvest through post-harvest food and feed safety will be covered in this course, with emphasis on the physical, chemical and biological aspects of food safety. Principles of cleaning, disinfection, sterilization and radiation as it applies to food production will also be discussed. Students should understand the concepts of developing a Hazard Analysis Critical Control Points (HACCP) program at both the pre-harvest and post-harvest stage.

Learning Objectives: (Supporting The Course Purpose)

At the end of the course, students will:

1. Identify the major physical, chemical, and biological (microbial) animal and human health hazards that may be present in foods of animal origin.
2. Describe food, feed and water-borne illness surveillance programs, and relate them to HACCP plans.
3. Be able to participate in an investigation of suspect food, feed, or water-borne illness in humans and animals.
4. Describe the epidemiological concepts of control and preventive measures (including biosecurity) necessary to ensure the safety of foods at the farm level (pre-harvest) and beyond (post-harvest).
5. Describe the major marketing channels for food animals (including transport) and the concept of trace back to the herd of origin for disease/problem investigation.
6. Know and recognize clinical conditions (lameness, fever, lethargy, etc) detectable in food animals prior to slaughter and the disposition of the animals demonstrating these clinical signs (ante mortem inspection).
7. Know the approved legal methods of humane management and slaughter in the USA.
8. Describe and recognize the common diseases detected during meat inspection examination of carcasses and their disposition.
9. Be aware of the progress made in the programs to eradicate tuberculosis, brucellosis and trichinosis in livestock in the USA.
10. Describe the current major biological, chemical, and physical hazards in animal feeds and factors affecting their growth and prevention.
11. Understand the concept of hazard analysis and critical control point systems (HACCP) as applied to the safety of foods of animal origin and feeds.
12. Be able to discuss the problems of antimicrobial resistance in foods and the responsibilities of veterinarians.
13. Understand the production of safe products of animal origin including on farm HACCP systems.
14. Describe the production systems needed for the production of safe eggs and poultry.
15. Describe the process of rendering and other decontamination techniques needed to produce safe ingredients for animal feeds.
16. Discuss the principles of cleaning, disinfection, rodent and insect control.
17. Describe the current programs for the detection and prevention of chemical and pharmacological residues in dairy products, meat and eggs.
18. Understand the State and Federal regulations and options relating to the safe disposal of carcasses.
19. Know how laboratory support services are used to ensure food and feed safety.
20. Be able to access the major regulatory requirements related to food and feed products of animal origin.
21. Understand the classes and types of feed additives used in production and companion animal diets.
22. List some of the common toxins and toxicants that may contaminate animal feeds, and understand their impacts on animal health.

23. Describe the toxicological effects of feed additives and contaminants in food animals, and their potential impact and effects on human health.

Course Policies and Procedures: (Attendance/Dress Code etc. – specific to course)

Attendance – Attendance and participation in discussion is required in order to optimize the educational benefit for all students. An excused absence may be granted in the case of illness or family emergency. Notification of absence must be directed to the course leader through personal communication, voice mail or email as early as possible.
Professional behavior - Professional behavior is conducive to an effective learning environment and is expected of all course participants. Professional behavior includes but is not limited to tolerance of others beliefs and opinions, arriving on time, and being prepared for class discussions.

Honor code - In compliance with the University and College requirements and recommendations.

Students with special needs - Please address any special needs or special accommodations at the beginning of the semester or as soon as you become aware. Those seeking accommodations based on disabilities should contact the Center for Disability Issues & the Health Professions (CDIHP) office (909 469-5380) to coordinate reasonable accommodations for students with documented disabilities. Retroactive disabilities related accommodations will not be granted.

EQUIPMENT/CLOTHING - During field trips, appropriate clothing should be worn. For slaughter plant facilities, this will include coveralls or white coats, hard hats (to be supplied by the CVM), and rubber boots. For other production facilities, students should consider clothing which is appropriate for the surroundings. Wearing loose jewelry, such as necklaces and dangling earrings, is discouraged during field trips.

Assessment: (Grades/Rubric/Exam)

Grades will be determined from the performance on the final exam; two course performance products; and performance and discussions in class/field trips.

Two course performance products will be due by 10 AM on the last day of the course (Friday, week 2) in electronic form. These performance products include a Food Safety Fact Sheet on a topic of the student's choosing, and a HACCP plan for the feed and water of a population of interest, which the student previously identified in the Population Health and Public Health courses. Late submissions are unacceptable and will result in failure of the course, regardless of the quality of the work. A summative examination will occur at the end of the course and must be completed prior to the start of the next course.

Assessment for this course is a weighted combination of technical and non-technical competencies.

Technical competencies: will be evaluated through a summative exam and the written performance products. The summative exam will consist of questions directly related to the expected learning issues from class discussions and course learning objectives, and questions consistent with expected food and feed safety knowledge assessment on the North American Veterinary Licensing Exam (NAVLE). Grades will be a straight scale score of percentage correct responses.

Non-technical competencies: will be evaluated by the course leader. Professional attitudes, behaviors, collaboration and interactions during the course will be considered. Assessment categories and expectations are described in the included rubric.

Course graded events will be weighted as follows to determine the course letter grade.

1.	Written performance products (15% each)	30.0%
2.	Summative Exam	60.0%
3.	Course Leader Evaluation	10.0%

GRADING SCALE

A (90+) A student with work at a professional advanced level with evidence of understanding of all course material.
B (80-89) A student who has achieved a high standard of understanding in some topics, although in some areas and issues have moderate understanding
C (70-79) A student who has achieved a moderate level of understanding in the majority of topics
D (65-69) A student who has achieved moderate levels of understanding in few topics, in some areas the student has achieved only rudimentary understanding
U (<65) A student who has failed to demonstrate an understanding of the topics or is so poor in some areas as to be "dangerous" to others if providing advice on food or feed safety issues.

Course Schedule:

This course will be delivered over a two week period. Specific course events will be announced at the first class meeting, and updates will be announced electronically.

Resources:

All required course materials will be available on Blackboard. Other recommended resources include:

Texts

1. Food Safety and Quality Assurance – Food of Animal Origin (1996), 2nd Edition, W. T. Hubbert, et al. Iowa

State Univ. Press
2. Pre-Harvest and Post-Harvest Food Safety (2004), R. C. Beier, et al. Editors, Blackwell Publishing, Ltd.
3. Microbial Food Safety in Animal Agriculture (2003), M. E. Torrence, R. E. Isaacson, Iowa State Univ. Press

Websites

1. USAD-FSIS (http://www.fsis.usda.gov/)
2. California Department of Food and Agriculture (http://www.cdfa.ca.gov/)
3. Foodborne Disease Outbreak Investigation Toolkit (CDC) (http://www.cdc.gov/foodborneoutbreaks/)
4. USDA/FDA Foodborne Illness Education Information Center (http://www.nal.usda.gov/foodborne/)
5. USDA-APHIS National Poultry Improvement Plan (http://www.aphis.usda.gov/vs/npip/)
6. FDA Center for Veterinary Medicine (http://www.fda.gov/cvm/default.html)
7. Food Animal Residue Avoidance Databank (FARAD) (http://www.farad.org/)
8. Generic HACCP models (http://www.fsis.usda.gov/OA/haccp/models.htm)
9. NAHMS - National Animal Health Monitoring System (http://www.aphis.usda.gov/vs/ceah/ncahs/nahms/index.htm)
10. Agency for Toxic Substances & Disease Registry (http://www.atsdr.cdc.gov/)
11. Toxicology Data Network (http://toxnet.nlm.nih.gov/)

Quality Assurance Programs, such as American Egg Board, National Cattlemen's Beef Association and National Pork Board.

List-Serves

1. FSNET (Food Safety Network) http://www.foodsafetynetwork.ca/listservs.htm
2. PROMED (Program for Monitoring Emerging Diseases) http://www.fas.org/promed/

Appendices: (Detailed Schedules/Assessment rubrics/University, College Information/Forms/Surveys etc.)

RUBRIC FOR PERFORMANCE PRODUCTS (FACT SHEET AND HACCP PLAN)

Level of demonstration of understanding	Professional (5 points)	Competent (4 points)	Marginal (3 points)	Unacceptable (0 points)
Content				
Discussion of problem or situation	Accurate and concise description of the problem or situation being addressed.	Accurate identification of the problem or situation being addressed. Demonstration of basic understanding of why the situation occurred and solutions presented.	General identification of the problem or situation being addressed, but some areas remain unidentified. Solution stated but not discussed.	Failure to correctly identify the problem or situation
Discussion of factors leading to the problem or situation	Thorough, concise description of all factors contributing to the problem or situation. Discussion of degree of accountability related to each factor.	Description of major factors contributing to the problem or situation. Some minor overlooked. Some degree of accountability discussed.	Has included the major contributing factors to the problem or situation but fails to identify degree of accountability.	No demonstration of an understanding of even major contributing factors to the problem or situation.
Discussion of solution for problem or situation	Thorough, concise description of all necessary measures for resolution of the problem or situation. Provides thorough explanation of both positive and negative aspects of	Description of major necessary measures for resolution of the problem or situation. Discusses recommendations for preferred resolution measures.	Has included some major measures for resolution of the problem or situation but fails to justify the recommended resolution measures.	No demonstration of an understanding of even basic resolution measures.

	recommended resolution measures. Addresses why the recommended measures are preferable and briefly discusses why alternatives are not as suitable in this situation.			
Identification of proper agencies or organizations	Demonstrates knowledge of all local, regional, state, national, or international agencies or organizations necessary to effectively address the problem or situation. Recommends quality and quantity of communication and collaboration with such agencies. Understands the roles of individual agencies and makes necessary adjustments to recommended protocols to maximize efficiency in resolution of the current situation or problem.	Demonstrates knowledge of major of state, regional, national, or international agencies or organizations necessary to effectively address the problem or situation. Understands the roles of individual agencies in resolution of the current situation or problem.	Demonstrates knowledge of some state, regional, national, or international agencies or organizations necessary to effectively address the problem or situation. Understands portions of the roles of individual agencies in resolution of the current situation or problem.	Unable to demonstrate knowledge of state, regional, national, or international agencies or organizations necessary to effectively address the problem or situation or the roles of individual agencies in resolution of the current situation or problem.
Critical thinking	Demonstration of a clear line of thought, through clearly structured and documented recommendations and reasoning for those recommendations.	Reasonable recommendations provided. However reasoning not always clear or documented.	Vague recommendations, poorly thought out, recommendations only partly correct in fact.	No demonstration of critical thinking, recommendations are false or incorrect
Organization	Information presented in logical sequence which client can follow. Organization allows for immediate access to specific information without reading entire document.	Student presents information in logical sequence which client can follow. Difficult to access specific information without reading much of document.	Client has difficulty understanding information because interruptions in logical sequence.	Client cannot understand information because there is no sequence of information.
Written communication	Conveys the ideas and recommendations discussed in a succinct and clear manner.	Conveys the ideas and recommendations clearly most of the time.	Able to convey idea or recommendation clearly most of the time. Unable to clearly discern recommendations occasionally.	Unable to convey the idea or recommendation clearly. Thoughts seem muddled.

Use of terminology	Correctly use the terminology at all times. Also, recognizes particular nuances that may sometimes be confusing. The use of terminology enhances the arguments as it makes discussions clear.	Able to understand the terminology and use correctly all or overwhelmingly most times.	Aware of the terminology, however, frequently fails to understand the terminology and therefore, incorrectly uses the terminology often. However the argument being advanced is still reasonable clear.	Either unaware of the terminology and its use is not included in the paper, or consistently uses terminology incorrectly to the point that the argument is not clear

RUBRIC FOR NON-TECHNICAL COMPETENCIES

Level of demonstration	**Professional (5 points)**	**Competent (4 points)**	**Marginal (3 points)**	**Unacceptable (0 points)**
Professionalism	Strong team member and active participant in discussions. Always works respectfully and cooperatively with others.	Good team member and active participant in discussions. Works respectfully and cooperatively with others.	Occasionally behavior not reflective of a team player. Lack of participation in discussions. Does not always work respectfully or cooperatively with others.	Behavior not reflective of a team player. Does not participate in discussions. Does not work respectfully or cooperatively with others.
Collaboration	Openly shares thoughts and ideas and listens to those of others. Provides detailed and descriptive feedback and highly receptive to feedback from others.	In general, shares thoughts and ideas and listens to those of others. In general provides constructive feedback and receptive to feedback from others.	Does not always openly share thoughts and ideas and listen to those of others. Does not always provide constructive feedback or is receptive to feedback from others.	Does not openly share thoughts and ideas and listen to those of others. Does not provide constructive feedback and is not receptive to feedback from others.
Communication	Communication is always non-judgmental, accepting and understanding.	Most of the time communication is non-judgmental, accepting and understanding.	At times communication was judgmental and not accepting or understanding.	Communication was judgmental and not accepting or understanding.
Self-directed learning	Highly self-motivated and eager to learn. Recognized inadequacies in knowledge and took appropriate measures to resolve inadequacies.	Good motivation to learn. In general recognized inadequacies in knowledge and took appropriate measures to resolve inadequacies.	Motivation to learn lacking at times. At times lacks awareness of inadequacies in knowledge and made some attempt to resolve inadequacies.	Lacks motivation to learn. Completely lacks awareness of inadequacies in knowledge or does not attempt to resolve inadequacies.
Critical appraisal	Critically evaluated learning resources.	Usually evaluated learning resources.	Evaluation of learning resources	Does not critically

			is lacking.	evaluate learning resources.
Work ethic	Always prompt, dependable and reliable.	In most circumstances is prompt, reliable and dependable.	Not always prompt reliable or dependable. Absences notable.	Not prompt, reliable or dependable. Prominent absences.