Syllabus
4311/5311/6311
Pharmaceutical Use in Cattle
Spring/Summer/Fall Semesters
Elaine Blythe, Pharm D.
http://wtamu.edu/academics/veterinary-pharmacy.aspx

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www.facebook.com/PharmaceuticalUseInCattleOnlineCourse

Texts and Other Materials
No text is required. All instructional materials will be provided via the course web site.

Course Description
Persons actively involved in the administration, distribution or sale of prescription and over-the-counter (OTC) pharmaceuticals used in food animals can benefit from comprehensive education on the therapeutic options for beef and dairy cattle. Students can use their drug knowledge base and skill set to collaborate with an attending veterinarian to maximize therapeutic outcomes, prevent drug-related problems and protect the wholesomeness of the food supply chain.

Upon completing this course, students will have obtained knowledge and skills that can positively impact educational, veterinary and economic outcomes by applying drug knowledge resources to food animal operations. This course will provide instruction on basic pharmacology, indications, precautions, and adverse effects of veterinary labeled pharmaceuticals for the treatment of diseases affecting beef and dairy cattle. A comprehensive review of the classes of pharmaceuticals used in the therapeutic treatment of disease states will be presented. Legal and regulatory issues that affect responsible pharmaceutical use and food safety topics will be emphasized. Medication use practices supporting quality assurance initiatives will be highlighted. Exploration and utilization of print and internet-based veterinary
resources will be presented. Additionally, current topics in production animal medicine will be discussed.

This course will be offered in an online format to all interested students attending an accredited institution of higher learning, specifically focusing on universities with strong agricultural curriculums and programs (animal science, dairy science, feedyard/ranch management, ag education, meat science). Additionally, students enrolled in veterinary technology programs may also benefit.

### Objectives/Student Learning Outcomes

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<thead>
<tr>
<th>Course Learning Objectives</th>
<th>Bloom’s Taxonomy Level</th>
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<tbody>
<tr>
<td>1. To recall, explain and apply legal and regulatory information specific to veterinary medicine, veterinary pharmacy and food-animal production medicine.</td>
<td>I and II</td>
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<tr>
<td>2. To communicate effectively with animal owners, veterinarians, and animal health professionals to: implement judicious use of pharmaceutical principles, solve drug administration problems, and correctly document pharmaceutical use to prevent drug residues in beef and dairy cattle.</td>
<td>II, III and IV</td>
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<tr>
<td>3. To recall, explain and apply basic pharmacology principles to enhance medication compliance, solve drug administration problems, and implement drug therapy practices for the betterment of animal health.</td>
<td>I, II and III</td>
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<tr>
<td>4. To recall, explain and apply basic pharmacokinetic principles that govern the adsorption, distribution, metabolism and excretion of pharmaceuticals in cattle.</td>
<td>I, II and III</td>
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<tr>
<td>5. To recall and apply indications, contraindications, adverse effects, drug interactions, and storage conditions for the top 10 classes of FDA approved pharmaceuticals commonly used in the treatment of beef and dairy cattle.</td>
<td>II and III</td>
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<tr>
<td>6. To recall and explain principles supporting proper use of injectable/parenteral medications in cattle.</td>
<td>I and II</td>
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<tr>
<td>7. To explain human health hazards of some veterinary pharmaceuticals.</td>
<td>II</td>
</tr>
<tr>
<td>8. Summarize current topics in production animal medicine</td>
<td>II</td>
</tr>
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<td>9. Utilize resources for the calculation of drug dosages.</td>
<td>II</td>
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Program Learning Outcomes
To provide students with training in teaching, research and service areas related to production agriculture. Since this is an elective course, it is supportive to the elective credit requirements for most agriculture related degree programs.

Course Requirements and Evaluation
This 3 credit hour course will be offered entirely online. Students will read content on the course web site, participate in question and answer sessions, responsive readings and online exams to assess the student’s ability to meet the objectives of the course. Students will be required to contribute to discussion groups and respond to cases generated by the instructor.

For Masters students (5311 section) there will be an learning assignment whereby the student must search the literature for an article, white paper, industry guidelines or related document and apply content learned in Pharmaceutical Use in Cattle directly to the literature topic. Students will write and submit a report on their literature search activity to the instructor and describe how they would apply content from the course and its learning objectives directly to the researched topic. This will account for 20% of their grade under "participation" in the syllabus.

For Ph.D. students only (6311 section) there will be an active learning experience where students will be expected to set up a single, 3-hour shadowing/observation with a beef cattle veterinarian, a sales rep from a veterinary drug distributor, a veterinary pharmacy, a processing/doctoring crew, or scheduled visit to a dairy with the consulting veterinarian. Students will write and submit a descriptive report on their experience to the instructor and relate what they did/saw/learned directly to the course learning objectives. This will account for 20% of their grade under "participation" in the syllabus.

Examination #1 40%
Examination #2 40%
Discussion and/or Participation 20%
The standard grading system will be utilized

Academic Integrity
All work must be completed individually unless otherwise stated. Commission of any of the following acts shall constitute scholastic dishonesty: acquiring or providing information for any assigned work or examination from any unauthorized source; informing any person or persons of the contents of any examination prior to the time the exam is given in any subsequent sections of the course or as a makeup; plagiarism; submission of a paper or project that is substantially the same for two courses unless expressly authorized by the instructor to do so. For more information, see the Code of Student Life ¹.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (Code of Student Life). Unacceptable or disruptive behavior will not be tolerated. Inappropriate behavior may result in disciplinary action or referral to the University’s Behavioral Intervention Team. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc.

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**ADA Statement**

West Texas A&M University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to register with [Student Disability Services](http://www.studentdisability.wtamu.edu) (SDS) and to contact faculty members in a timely fashion to arrange for suitable accommodations. Contact Information: Student Success Center, CC 106; phone (806) 651-2335.

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**Readings and Content Topics**

Introduction to Pharmaceutical Use in Cattle Course

1. Terms and Definitions

2. Legal and Regulatory Issues
   
i. AMDUCA – Animal Medicinal Drug Use Clarification Act
   
ii. CPG 615.200 Proper Drug Use and Residue Avoidance by Non-Veterinarians
   
iii. CPG 615.300 Responsibility for Illegal Drug Residues in Meat, Milk and Eggs
   
iv. Guidance for Industry #230 - Compounding Animal Drugs
   
 v. Judicious Use of Antibiotics in Beef and Dairy Cattle Principles
   
 vi. Edible Protein Quality Assurance Programs
vii. Pasteurized Milk Ordinance (PMO)

viii. Veterinary Feed Directives (VFD) and Medicated Feed Additives

ix. Veterinary Drug Distribution and Pharmacy Labeling

3. Disease State Information

4. Veterinary Drug Information Resources

5. Basic Pharmacology and Pharmacokinetics

6. Classes of Pharmaceuticals

   i. Antibiotics (systemic and intramammary)

   ii. Anti-inflammatory; steroids and non-steroidal

   iii. Diuretics

   iv. Gastrointestinal

   v. Reproductive Management Medications

   vi. Endectocides and Antinematodal Medications

   vii. Injectable Vitamins and Minerals

   viii. Fluids

   ix. Antidotes

   x. Miscellaneous Medications

7. Pharmaceutical Calculations and Conversion Factors

8. Proper Use of Injectable/Parenteral Drugs

9. Human Health Hazards of Veterinary Drugs

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2. [http://www.wtamu.edu/student-support/disability-services.aspx](http://www.wtamu.edu/student-support/disability-services.aspx)