

# University of Wyoming

## PHCY 5160

### Veterinary Pharmacy Elective

### Spring 2025



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Veterinary Pharmacy Elective

Spring 2025 - 2 Credits

The purpose of this course is to introduce concepts of veterinary medicine that are relevant to the practicing pharmacist. With the ever-expanding field of veterinary pharmacy and the increasing use of pharmaceuticals in veterinary medicine, it is imperative for pharmacists to have a baseline understanding of concepts of veterinary medicine. This course will provide practical information about disease states and pharmaceuticals used for companion animals, equines, food animals, and exotics.

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### Student Learning Outcomes

***Outcome 1: The student will understand the basic principles, references and regulations for veterinary patients.***

- List reputable veterinary references that are available.
- Understand the difference between dosing in animals versus adult humans.
- Understand that veterinary medicine is regulated much differently than human medicine, and that the same standards, regulations and information does not apply to veterinary patients.
- Know the differences between FDA-approved medications for animals versus humans and how to tell the difference.

***Outcome 2: The student will learn the major anatomical and physiological differences in the major species focusing on where drugs play critical roles.***

- Explain the anatomy and physiology of dogs, cats, horses, cattle, and other species.
- List the major differences anatomically and physiology related to administration, metabolism, distribution and elimination of drugs.
- Appreciate the differences in pharmacokinetics, pharmacodynamics, and pharmacogenetics.

***Outcome 3: The student will understand canine and feline patients (companion animals) and the major disease states that afflict them.***

- Understand and explain common disease states and treatment options for the canine patient.
- Understand and explain common disease states and treatment options for the feline patient.

***Outcome 4: The student will understand equine patients and the major disease states that afflict them.***

- Understand and explain common disease states and treatment options for the equine patient.

***Outcome 5: The student will learn a basic overview of food animals.***

- Understand the definition of food animals and common diseases that afflict them.
- Know the options for treating food animals and recognize the banned medications that cannot be used to treat these species.
- Discuss the different food animal species besides cattle including camelids, porcine, ovine and other hoof stock.

***Outcome 6: The student will learn a basic overview of exotic and wildlife species.***

- Recognize the different exotic and wildlife species and the types of references and studies that exist about these animals.
- Understand the challenges with administration and dosing for exotic and wildlife species

***Outcome 7: The student will learn the basic principles to be a dispensing and/or compounding pharmacist for many non-human species.***

- Understand the benefits and risks of compounding for animals.
  - Overview toxicology in animals and what excipients and products might be harmful for animals.
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**Required Texts and Resources**

Mealey K. Pharmacotherapeutics for Veterinary Dispensing, Hoboken, NJ: Wiley Blackwell. 2019. ISBN 978-1-119-40454-5

- Available through UW Library Database through Wiley Online Library. Physical textbook may be purchased if desired.

Plumb's Veterinary Drugs

- Available through UW Library Database.

**Suggested Texts and Resources**

**Books:**

Papich MG. Papich Handbook of Veterinary Drugs, 5th ed., St Louis, MO: Elsevier. 2021. ISBN 978-0-323-70957-6

- Available through UW Library Database through ScienceDirect Journals and EBooks. Physical textbook may be purchased if desired.

**Other Resources:**

Clinician's Brief

- Available online for free. Excellent resource for news and current practice in veterinary medicine. Includes videos, articles, podcasts, quizzes, and CE courses.

dvm360

- Available online for free. Good resource for news in veterinary medicine. Includes podcasts and short articles.

Food Animal Residue Avoidance Databank (FARAD)

- Available online for free. Preferred resource for withdrawal times for food animals.

*Instructor will upload or provide additional materials not listed above if needed.*

**Instructor Availability/Contact Information**

Sidonie Gallinger, PharmD

- Email: sgallin1@uwyo.edu
  - Office Hours: By appointment via Zoom
    - I will set up a Zoom meeting at a scheduled time once weekly in order for students to ask questions about the week's material, assignments, and exams and to discuss current veterinary medicine topics. Discussion boards will also be available if there are any questions.
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### **Class Website**

WyoCourses is the course website. Lecture slides and video recordings of the lecture will be made available the weekend before the scheduled lecture and posted to WyoCourses under "Modules". Assignments and weekly quizzes will also be posted to WyoCourses under "Assignments". The student is expected to utilize WyoCourses and notify the instructor immediately if there are any difficulties with navigating the site.

### **Course Pre-Requisites, Co-Requisites, and Enrollment Restrictions**

This course is available to P2 pharmacy students and fulfills two elective credit hours.

### **Course Procedures and Requirements**

Students will complete the course asynchronously; therefore, an electronic device with internet access is required. Lecture material will be provided weekly, which will include lecture slides (in PDF format), video recording of the lecture, and a review sheet. Students are expected to review the designated resources for the week (book chapters and other supplemental materials provided at the instructor's discretion) prior to watching the lecture. Students are encouraged to engage with the material and ask questions. Opening and closing times for quizzes, assignments, and exams will be posted and strictly enforced. Refer to the Course Schedule at the end of the syllabus for details.

### **Attendance and Absence Policy**

Since the course is asynchronous, the course may be completed on the student's own time within the designated due dates. Inability to complete the course material within the designated time frame due to prolonged absence, medical emergency, etc. must be discussed with the course instructor in advance.

### **Classroom Behavior Policy**

Pharmacy is a profession; therefore, pharmacy students must display exceptional professionalism. Complete course materials on time, engage with the content, and put forth good effort. Debate and disagreement are expected in higher-level courses and all views will be fully heard; however, we will all be civil and respect each other. Personal attacks, offensive language, name-calling, and dismissive gestures are not permitted in a learning atmosphere.

This is a safe environment and the instructor has the right to dismiss any students who display disruptive behavior.

### **Classroom Statement on Diversity**

The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning.

### **Disability Support**

If you have a physical, learning, sensory, or psychological disability and require accommodations, please let me know as soon as possible. It is in your best interest to request accommodations within the first week of classes. You will need to register with, and possibly provide documentation of your disability to Disability Support Services (DSS), room 109 Knight Hall. You may also contact DSS at (307)-766-3073 or [udss@uwyo.edu](mailto:udss@uwyo.edu). Visit their website for more information: <http://www.uwyo.edu/udss>.

### **Academic Dishonesty Policies**

Academic dishonesty will not be tolerated in this course. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include an "F" on an assignment, an "F" on multiple assignments, and/or an "F" in the entire course. Academic dishonesty means anything that represents someone else's ideas as your own without attribution. It is intellectual theft - stealing - and includes (but is not limited to) unapproved assistance on exams, plagiarism (use of any amount of another person's writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person's academic dishonesty is also considered academic dishonesty and will be treated identically.

### **Artificial Intelligence Policy**

Use of artificial intelligence or machine learning tools is strictly prohibited in this course. Students are expected to complete all assignments on their own without assistance from others, including automated tools.

### **Duty to Report**

UW faculty are committed to supporting students and upholding the University's non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty member, understand that as a "Responsible Employee" of the University, the faculty member MUST report information you share about

the incident to the university's Title IX Coordinator (you may choose whether you or anyone involved is identified by name). If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at <http://www.uwyo.edu/reportit>. You do not have to go through the experience alone. Assistance and resources are available, and you are not required to make a formal complaint or participate in an investigation to access.

### **Green Dot Program at UW**

Here at The University of Wyoming, we are committed to reducing and preventing power-based personal violence such as sexual assault, relationship violence, and stalking. Green Dot is a bystander intervention program to reduce these forms of violence with one thought; If everyone does one thing, no one will have to do everything. A Green Dot is your choice at any moment to make campus safer by promoting safety for everyone and letting others know that you will not tolerate violence. A Green Dot is any behavior, choice, word or attitude that sends a clear message that: 1. Violence is not okay with you, and 2. Everyone is expected to do their part. Additional information on Green DOT training and resources are available at: <http://www.uwyo.edu/greendot/>

### **COVID-19 Policies**

Despite being past the COVID-19 pandemic, students are still required to abide by all UW policies and public health rules put forward by the City of Laramie, the University of Wyoming, and the State of Wyoming to promote the health and well-being of fellow students.

### **Syllabus Changes**

All deadlines, requirements, and course structure is subject to change as deemed necessary by the instructor. Students will be notified in advance on the "Announcements" section of WyoCourses of any changes.

### **Informational Technology (IT)**

If you have any IT-related issues, please contact the UWIT Service Center.  
<https://www.uwyo.edu/infotech/>

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### **Grades**

Grades will be assigned as follows:

- A: 90% - 100%
- B: 80% - 89.9%
- C: 70% - 79.9%
- D: 60% - 69.9%
- F: <60%

## Grade composition:

Assignment	Percentage of Total Grade	Due Date
Exam 1	15%	02/16/2025 @ 11:59 PM
Exam 2	15%	03/30/2025 @ 11:59 PM
Exam 3	15%	05/04/2025 @ 11:59 PM
Quizzes (10 total)	20%	Sundays at 11:59 PM
Calculations Worksheet	10%	02/23/2025 @ 11:59 PM
Veterinary Drug Handout	15%	04/06/2025 @ 11:59 PM
Patient Case and Script Worksheet	10%	04/20/2025 @ 11:59 PM
<b>Total</b>	<b>100%</b>	

## Exams:

- The student will be evaluated by three exams. The exams are not comprehensive, and there is no final exam (the third exam will act as the final exam). Once started, students will have three hours to complete each exam. Students may use their personal notes and online references for each exam; however, collaboration with other students is prohibited. Exams will be completed on WyoCourses, and will consist of multiple-choice, true/false, select all that apply, fill-in-the-blank, and short answer questions. See the Course Schedule at the end of the syllabus for details regarding the material to be tested for each exam.

## Quizzes:

- There will be ten quizzes for the course. Each quiz will cover material from the previous week's lecture - refer to the Course Schedule for what topics will be covered. Once the quiz is started, it will remain open for 20 minutes. Students may use their notes and online references for each quiz; however, collaboration with other students is prohibited. Quizzes will be completed on WyoCourses, and will consist of multiple-choice, true/false, select all that apply, fill-in-the-blank, and short answer questions.

## Calculations Worksheet:

- The calculations worksheet will be available on WyoCourses under "Assignments". The student is required to complete this worksheet and upload it to WyoCourses by the due

date (see Course Schedule). Partial credit may be assigned if all work is shown.

### **Patient Case and Scripts Worksheet:**

- The patient case and scripts worksheet will be available on WyoCourses under “Assignments”. The student is required to complete this worksheet and upload it to WyoCourses by the due date (see Course Schedule). Partial credit may be assigned if appropriate justification and references are provided.

### **Veterinary Drug Handout:**

- The student will be required to choose a veterinary-only drug from the list on WyoCourses (or with written approval from the instructor) and create a handout, which is to be uploaded to WyoCourses by the due date (see Course Schedule). Example of handouts will be provided to the student on WyoCourses under “Modules”. At least two credible references must be cited in the handout. The handout may be three pages maximum.
  - Drug Handout Minimum Requirements:
    - Picture of the drug (tablet, capsule, vial, bottle, etc.)
    - Brand/trade and generic names of drug
    - FDA approval date or conditional approval date
    - Species the drug is approved for (include species it is used extralabel if applicable)
    - Drug class, mechanism of action, and pertinent pharmacokinetic information (e.g., half-life)
    - Indications for use (include off-label/extralabel if applicable)
    - Dosage forms available in the United States
    - Dosing and administration instructions for FDA-approved species and indications (include pictures if there is a specific administration device)
    - Adverse drug effects
    - Contraindications, precautions, and warnings for use (including reproductive safety if applicable)
    - Major drug interactions
    - Monitoring parameters
    - Storage and stability (include compounding information if available/applicable)
    - Comparable human products (if applicable)
    - Comparable veterinary products (if applicable)
    - Where does this drug fit in guidelines? (e.g., is this something a veterinarian would prescribe first-line, or is it something that is last-resort?)
    - References

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### **Course Schedule**



It is encouraged to read the resource material prior to viewing the recorded lecture. Additional materials and resources for the week (if not included in this schedule) will be provided on WyoCourses under “Modules”.

**\*\*All deadlines, requirements, and course structure are subject to change as deemed necessary by the instructor. Students will be notified in advance on the “Announcements” section of WyoCourses of any changes.\*\***

Week	Lecture Topics	Resources	Assignments Due
<b>Week 1</b> <b>01/21/2025</b>	Syllabus Overview  Introduction to Veterinary Pharmacy	Mealy Ch 1	
<b>Week 2</b> <b>01/27/2025</b>	Species Differences (Anatomy, Physiology, PK/PD/PG)  OTCs and Toxicology	Mealy Ch 4, 5, and 6	Quiz 1 (Covers Week 1)  <b>Due 01/26/2025 @ 11:59 PM</b>
<b>Week 3</b> <b>02/03/2025</b>	Regulation of Veterinary Medicine  Compounding for Veterinary Patients	Mealy Ch 2 and 3	Quiz 2 (Covers Week 2)  <b>Due 02/02/2025 @ 11:59 PM</b>
<b>Week 4</b> <b>02/10/2025</b>	EXAM 1: Covers Weeks 1-3  <b>Due 02/16/2025 @ 11:59 PM</b>		
<b>Week 5</b> <b>02/18/2025</b>	Parasitic Diseases	Mealy Ch 7	Quiz 3 (Covers Week 3)  <b>Due 02/16/2025 @ 11:59 PM</b>
<b>Week 6</b> <b>02/24/2025</b>	Gastrointestinal, Hepatic, Renal, and Urinary Tract Diseases	Mealy Ch 12 and 13	Quiz 4 (Covers Week 5)  Calculations Worksheet  <b>BOTH due 02/23/2025 @ 11:59 PM</b>
<b>Week 7</b> <b>03/03/2025</b>	Cardiac Diseases  Respiratory Diseases	Mealy Ch 10 and 11	Quiz 5 (Covers Week 6)  <b>Due 03/02/2025 @ 11:59 PM</b>
<b>Week 8</b>	Neurologic Diseases  Behavioral Diseases	Mealy Ch 8, 16, and 17	Quiz 6 (Covers Week 7)

03/10/2025	Pain/Anesthesia		Due 03/09/2025 @ 11:59 PM
03/17/2025	Spring Break - Enjoy Your Time Off!		
Week 9	Exam 2: Covers Weeks 5-8		
03/24/2025	Due 03/30/2025 @ 11:59 PM		
Week 10	Endocrine Diseases	Mealy Ch 14 and 15	Quiz 7 (Covers Week 8)
03/31/2025	Immune-Mediated Diseases		Due 03/30/2025 @ 11:59 PM
Week 11	Oncology	Mealy Ch 9 and 20	Quiz 8 (Covers Week 10)
04/07/2025	Infectious Diseases		Veterinary Drug Handout BOTH due 04/06/2025 @ 11:59 PM
Week 12	Ophthalmology	Mealy Ch 18 and 19	Quiz 9 (Covers Week 11)
04/14/2025	Dermatology		Due 04/13/2025 @ 11:59 PM
Week 13	Food Animal Medicine	Mealy Ch 22, 23, and 24	Quiz 10 (Covers Week 12)
04/21/2025	Exotics and Wildlife Medicine		Patient Case and Scripts Worksheet
	Considerations with Working, Service, and Performance Animals		BOTH due 04/20/2025 @ 11:59 PM
Week 14	Exam 3: Covers Weeks 10-13		
04/28/2025	Due 05/04/2025 @ 11:59 PM		

## Pharmacists' Patient Care Process

Pharmacists use a patient-centered approach in collaboration with other providers on the health care team to optimize patient health and medication outcomes.

Using principles of evidence-based practice, pharmacists:

### Collect

The pharmacist assures the collection of the necessary subjective and objective information about the patient in order to understand the relevant medical/medication history and clinical status of the patient.

### Assess

The pharmacist assesses the information collected and analyzes the clinical effects of the patient's therapy in the context of the patient's overall health goals in order to identify and prioritize problems and achieve optimal care.

### Plan

The pharmacist develops an individualized patient-centered care plan, in collaboration with other health care professionals and the patient or caregiver that is evidence-based and cost-effective.

### Implement

The pharmacist implements the care plan in collaboration with other health care professionals and the patient or caregiver.

### Follow-up: Monitor and Evaluate

The pharmacist monitors and evaluates the effectiveness of the care plan and modifies the plan in collaboration with other health care professionals and the patient or caregiver as needed.

