VEM 5286 – Clinical Pharmacology
University of Florida College of Veterinary Medicine

I. Course information
Number: VEM 5286
Course Title: Clinical Pharmacology
Phase: Two/Sophomore year
Semester: Spring
Year: 2016
Course credit: 1

II. General information
Course director: Travis Lanaux, DVM, DACVECC (ECC) and Amara H. Estrada, DVM, DACVIM (Cardiology)
Office location & office hours: (Lanaux) TBD by request and (Estrada) Room 377 SAH, Office Hours TBD by individual lecturers
Office phone number: 352-294-4493
Email: lanaux@ufl.edu
Course Faculty: Estrada, Eide, LeJeune, Plummer, Reuss, Hill, Gram, Sanchez, Lanaux, Wuerz, Maunsell, Shih, Swift

III. Course description
Course goals/ Educational goals of the course: This course will build on your fall core pharmacology course, VEM 5171, where you have already learned basic mechanisms of action of drugs. This course will focus on the clinical use of drugs in different disease processes with the intent of preparing you for your clinical experience.

Course Outline & Schedule:

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<tr>
<th>Lecture Topic</th>
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| Course Introduction & Clinical approach to management of heart disease | Dr. Travis Lanaux  
Dr. Simon Swift |
| Clinical approach to management of heart disease | Dr. Simon Swift |
| Clinical Approach to Chemotherapeutic Agents | Dr. Amandine LeJeune |
| Clinical Approach to Chemotherapeutic Agents | Dr. Amandine LeJeune |
| Clinical Approach to Small Animal Pancreatic and Liver disease | Dr. Richard Hill |
| Clinical Approach to Large Animal Internal Parasite Control | Dr. Sarah Reuss |
| Clinical Approach to Small Animal Antibiotic Therapy | Dr. Richard Hill |
### IV. Course Materials:

**Required Text(s):**
- Course notes and materials on Canvas.

**Recommended Text(s):**

### V. Evaluation/ Grading/ Testing:

The exam is in the multiple-choice format. Information from the notes form the basis of these questions, but questions may also come from material presented in class. **This course will use current UF grading policies for assigning grade points. Information regarding this can be found at [http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html](http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html).**

Don’t forget to evaluate your instructors, visit the UF Evaluation site at:
VI. Administrative Policies: see Student Handbook @

College and UF Policies:
UFCVM policies that address class attendance, remediation, grading, academic integrity, classroom responsibilities, and accommodations for students with disabilities, as described in the Handbook for Students in the Professional Veterinary Curriculum http://www.vetmed.ufl.edu/education/dvmstudents/ will be followed.

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodations. Students with disabilities should follow this procedure as early as possible in the semester.

VII. Other information:
Important: You will need to review your notes from the VEM 5171 Pharmacology course as background information. You are responsible for retaining/obtaining previous notes. Do not contact lecturers for notes previously provided.

VII. Other information:
Some of the instructors in your course may also be using clickers for informal in-class polling. I will check out a set of loaner clickers from the education center if available as well. http://classrooms.at.ufl.edu/classroom-technology/turningpoint.php

Keywords & Objectives
Clinical approach to management of heart disease
Dr. Simon Swift, DVM, ECVIM (Cardiology)
Clinical Associate Professor
Objectives:
1. To understand the different classifications of heart failure in veterinary medicine
2. To know how to treat canine and feline patients with asymptomatic heart disease
3. Be able to recognise heart failure
4. To know how to treat acute heart failure
5. To know how to treat chronic heart failure and understand the differences between the different causes

Keywords:
Preload
Afterload
Inotropic State/Contractility
Heart Rate
Cardiac output
Heart Disease Classification
Degenerative Mitral Valve Disease (MVD)
Dilated Cardiomyopathy (DCM)
Hypertrophic Cardiomyopathy (HCM)

CLINICAL APPROACH TO CHEMOTHERAPEUTICS
Dr. Amandine LeJeune, DVM, Vet Dip. ACVIM (Oncology)
Clinical Assistant Professor

Objectives:
1. Students must review Chemotherapy Drugs from Basic Pharmacology course and have and understanding of the chemotherapy drug groups
2. Safe handling of Chemotherapy drugs. Students must be able to list the three processes involved in the safe handling of chemotherapy drugs. Based on the lecture students should be able to design a safe handling protocol for a private practice environment and list the required equipment and apparel.
3. Administration of Chemotherapy & Complications. Students should be able to list the acute and chronic complications associated with the administration of chemotherapy drugs. Based on information in the lecture students must be able to identify specific drug complication and therapy.

Keywords:
Chemotherapy
Preparation
Administration
Disposal
excretion routes
needless and closed administration systems
chemo safety kit
complications of chemotherapy
extravasation
myelosuppression
chemotherapy associated nausea
gastrointestinal complications
drug-specific administration complication

Clinical Approach to Small Animal Pancreatic and Liver Disease
Richard Hill, DVM, DACVIM (Internal Medicine)
Associate Professor

Objective:
To choose the appropriate therapy for common liver and pancreatic diseases in small animals

Keywords:
Exocrine pancreatic insufficiency
Acute pancreatitis
Liver failure
Encephalopathy
Ascites
Portal hypertension
Appetite stimulant

Clinical Approach to Large Animal Internal Parasites.
Dr. Sarah Reuss, DVM, DACVIM (Large Animal)
Clinical Assistant Professor

Keywords:
Anthelmintics, macrocyclic lactones, benzimidazoles, nicotinic agonists, fecal egg counts, anthelmintic resistance, refugia, FAMACHA, strongyles, ascarids, tapeworms, coccidia

Learning Objectives
1. Recognize clinical indications for anthelmintic treatment
2. Differentiate what drugs are appropriate for use in different species and ages
3. Devise treatment plans for horses, small ruminants, and cattle in Florida

CLINICAL APPROACH TO SMALL ANIMAL ANTIBIOTIC THERAPY
Richard Hill, DVM, DACVIM (Internal Medicine)
Associate Professor

Objective:
How to empirically choose an antibiotic for common bacterial conditions

Keywords:
Antibiotics
Penicillin
Cephalosporin
Aminoglycosides
Chloramphenicol
Tetracycline
Lincosamide
Macrolide
Fluoroquinolones
Trimethoprin
Sulfonamide

CLINICAL APPROACH TO SELECTED GI THERAPEUTICS (ACID SECRETION, MOTILITY MODULATION)
Chris Sanchez, DVM, PhD, DACVIM
Associate Professor

Objectives:
1. To understand the approach to treatment and prevention of gastric ulceration.
a. To define drugs available for treatment of gastric ulceration
b. To define drugs available for prevention of gastric ulceration
2. To understand adverse effects upon gastrointestinal motility of commonly used sedatives and analgesic drugs.
3. To understand the approach to treatment of gastrointestinal ileus.

**Keywords:**
- acid suppression
- gastric ulceration
- proton pump inhibitor
- ileus
- prokinetic

**APPROACH TO ANTIMICROBIAL USE IN HORSES**
Chris Sanchez, DVM, PhD, DACVIM
Associate Professor

**Objectives:**
1. To understand the steps involved in antimicrobial selection in adult horses and foals.
   a. To define the steps involved in choosing whether or not to use an antimicrobial drug
   b. To define the steps involved in selecting which antimicrobial (or class) to use in a given situation.
2. To understand antimicrobial drug classes commonly used in horses, their primary indications, and primary contraindications.

**Keywords:**
- Antibiotic
- beta lactam
- aminoglycoside
- fluroquinolone
- macrolide

**Clinical Approach to Dermatologic Drugs & Preparations**
Dunbar Gram, DVM, DACVD
Clinical Associate Professor

**Objectives:**
1. What is the most commonly involved organism in bacterial pyoderma of dogs and cats?
2. How long do you treat for a superficial vs. deep pyoderma?
3. What antibiotic class is your first choice?
4. When should you perform a bacterial culture and sensitivity testing?
5. What are the different pharmacological uses of Prednisone/Prednisolone.

**Key Words:**
- Bacterial pyoderma
Staphylococcus
antibiotic resistance
methicillin resistance
first line antibiotics
beta-lactam antibiotics
lincosamides
tetracyclines
sulfonamides
fluoroquinolones
Malassezia dermatitis
Azoles
Anti-inflammatory, Antipruritic, Physiological/replacement and safe prednisone dosing

Clinical Approach to Pain Management
Andre Shih, DVM, DACVA (Anesthesia)
Associate Professor

Objectives:
1. To know how the pain pathway develops and to understand the difference between chronic pain vs. acute pain.
2. Understand how to different analgesic options work during the perioperative pain and be able to design analgesic drug regimens for perioperative period:

Keywords:
Physiologic (Acute) pain
Pathologic (Chronic) pain
Inflammation
Pain receptor
Dorsal Horn
Analgesia
Perioperative pain
Opioids
Non Steroid Anti-inflammatory (NSAIDs)
Local Anesthetics (Lidocaine)
NMDA receptor antagonist (Ketamine)
Non Steroid Anti-inflammatory
Local Anesthetics
alpha2 agonist,
Pain pathway

Clinical Approach to Food Animal Antimicrobial Therapy (Do and Don’ts)
Fiona Maunsell, BVSc, PhD, DACVIM
Assistant Professor

Objectives:
1. To understand the basic regulatory issues that must be considered when using antimicrobials in food animals
2. To understand which antimicrobial drug classes are commonly used in food animals, their major indications and their major contraindications
3. To understand the steps involved in antimicrobial selection in food animals

**Key Words:**
Food animal
Prohibited substance
Meat withholding
Milk withholding
Violative residue
FDA
USDA Food Safety Inspection Service
AMDUCA
Extra-label drug use
Antimicrobial
Antibiotic
Beta lactam
Penicillin
Cephalosporin
Macrolide
Fluroquinolone
Florfenicol
Sulfonamide
Tetracycline

**Clinical Approach to Small Animal Internal Parasite Control**
Julia Wuerz, BS, DVM (Primary Care)
Clinical Assistant Professor

**Keywords:**
Heartworm
Roundworm
Hookworm
Whipworm
Tapeworms
Flukes
Giardia
Trichomoniasis
Coccidia

**Objectives:**
1. To familiarize yourself with a broad spectrum of medications commonly used to treat and prevent common internal parasites in veterinary medicine.
CLINICAL APPROACH TO PHARMACOLOGY OF OPHTHALMIC DISEASE
Caryn E. Plummer, DVM, DACVO (Ophthalmology)
Assistant Professor

Objectives:
1. Understand the obstacles to drug delivery to the eye
2. Recognize different routes of drug administration to the ocular tissues
3. Understand clinical uses, indications and contraindications for drugs to treat ophthalmic disease

Key Words:
Ophthalmic
Ocular
Topical
culture and sensitivity
solution
suspension
ointment
intracameral
retrobulbar
antimicrobial
anti-glaucoma therapy
anti-collagenase
lacrimostimulant
analgesic
diagnostic agent

Clinical Approach to Immunosuppressive Therapy for Small Animals
Dr. Travis Lanaux, DVM, DACVECC
Clinical Assistant Professor

Learning Objectives:
1. After the course, students should be able to list at least 4 immunosuppressive medications commonly used in small animals and the mechanism of action of each.
2. After the course, students should be able to discuss the benefits of using prednisone/prednisolone concurrently with another immunosuppressive medication.
3. After the course, students should be able to list at least one potential side effect for each immunosuppressive medication covered in the lecture notes.
4. After the course, students should be able to list at least one difference between immunosuppressive therapies in the cat compared to the dog.
5. After the course, students should be able to outline an appropriate monitoring protocol for patients treated with azathioprine, cyclosporine or leflunomide.
6. After the course, students should be able to contrast the relative costs, availability and routes of administration of the commonly used immunosuppressive medications.
Clinical Approach to use of Steroids in Small Animals
Dr. Travis Lanaux, DVM, DACVECC

Learning Objectives:
1. After the course, students should be able to define the dose ranges for physiologic, antiinflammatory, and immunosuppressive prednisone therapy and provide specific examples of clinical situations in which each dose would be utilized.
2. After the course, students should be able to contrast prednisone metabolism in the dog and cat and explain why this is clinically important.
3. After the course, students should be able to list at least four common side effects of steroid therapy.
4. After the course, students should be able to describe the potential effects of steroid therapy on the hypothalamic-pituitary-adrenal axis and provide an example of a situation in which this might have clinical consequences.
5. After the course, students should be able to list at least two steroid medications that can be used for each of the following applications: ophthalmic, otic, dermal, SQ deposition, oral, inhaled.

Keywords:
Prednisone
Prednisolone
Dexamethasone
Triamcinolone
Fluticasone
Budesonide
Topical steroid therapy
Inhaled steroid therapy
Physiologic steroid therapy
Anti-inflammatory steroid therapy
Immunosuppressive steroid therapy

Clinical Approach to Prescription Writing and Calculations (calculations, volume determinations, Rx writing)
Megan Eide, RPh, CPh (Pharmacy)

Objectives:
1. To calculate doses based upon patient weight
2. To demonstrate an understanding of simple conversions of concentration to mg/mL
3. To solve for dosage volumes required following reconstitution of drug
4. To calculate rate of flow for a drug to be administered in a continuous rate of infusion
5. To demonstrate an understanding of the relationship between strength and total quantity of drug
6. To review and apply requirements of prescription writing

**Key Words:**
Drug Concentration
Percentage/Ratio Strength
Rate of Drug Administration
Dose Frequency
Routes of Administration
Dosage Form