Course Syllabus

First Semester 2011

713 311 Principles of Veterinary Pharmacology 2 (2-0-2)

Class time   Sec I -   Friday   9-11 am   Classroom – VM1205

                         Sec II -   Friday   13-15 pm

Class major contents: Pharmacokinetics (PK) and Pharmacodynamics (PD)

Subject philosophy: Content-focus, Discussion-based, English-integrated

Class instructors   Dr.Korawuth Punareewattana

week	date	Topics
1	June 3	**Topic 1 -** Introduction to Pharmacology
2	June 10	*No class (annual conference)*
3	June 17	**Topic 2 -** Pharmacokinetics: Drug absorption
4	June 24	**Topic 3 -** Pharmacokinetics: Drug distribution
5	July 1	**Topic 4 -** Pharmacokinetics: Drug metabolism (Biotransformation)
6	July 8	**Topic 5 -** Pharmacokinetics: Drug excretion
7	July 15	**Topic 6 -** Pharmacokinetics: Drug elimination
8	July 22	**Topic 7 -** Pharmacodynamics: Dose-response relationship
9	July 29	*Midterm-exam (Topic 1-6)*
10	Aug 5	**Topic 8 -** Pharmacodynamics: Drug actions
11	Aug 12	*No class (Holiday)*
12	Aug 19	**Topic 9 -** Pharmacodynamics: Receptors
13	Aug 26	**Topic 10 -** Pharmacodynamics: Signal transduction
14	Sep 2	**Topic 11 -** Pharmacodynamics: Drug interaction
15	Sep 9	**Topic 12 -** Pharmacodynamics: Adverse drug reaction
16	Sep 16	Review session
		Final-exam (Topic 7-12)

Students can look and download full course syllabus and teaching materials on this link.

http://home.kku.ac.th/korawut/prin-phar/

Teaching Materials

1) Pharmacology: Principles and Practice. first edition 2009   **main reference**

     Edit by Miles Hacker

2) Modern Pharmacology with Clinical Applications. sixth edition 2003   **main reference**

     Edit by Charles R. Craig

3) <u>Goodman and Gilman's Manual of Pharmacology and Therapeutics</u> first edition 2008 Edit by Laurence L. Brunton

4) <u>Small animal clinical pharmacology</u> second edition 2008 Edit by Jill E Maddison

5) <u>Color Atlas of Pharmacology</u>. Third edition 2005 Edit by Heinz Lullmann

6) <u>Veterinary Drug Handbook</u> Third edition Edit by DC Plumb

Study Pattern

Before class   - Reading assigned materials

First 20 min   - Pre-test and name check

Next 50 min   - Lecture and discussion on the subject

                - Questions and answers

Last 30 min   - Individual or Group activities and writing essay as post-test

Last 10 min   - Conclusion and assigning materials for next class

Note on Class activities and English skills

Activities	English Skills				
	Listening	Speaking	Reading	Writing	Pronunciation
Reading assignment			/		
Pre-test			/	/	
Name check		/			
Lecture	/				
Q & A during lecture		/			
Group activities	/	/	/	/	/
Post-test				/	

Evaluation criteria		Grade	
Pre-test	10 %	A	>80
Asking and Answering	5 %	B+	75-79.99
Post-test	20 %	B	70-74.99
Mid-term	30 %	C+	65-69.99
Final	30 %	C	60-64.99
Oral exam	5 %	D+	55-59.99
		D	50-54.99

Teaching Plans

Topic 1   Introduction to pharmacology

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Define most definitions in pharmacological fields
- Identify the sources of drugs and types of substance that can be used as a drug
- Explain about drug standards
- Explain how to call name of a drug in different ways and know how to use them
- Explain how drugs can be classified and the meanings of those groups
- Explain the process of drug development from natural resources to drug store
- Explain the types of research involved in the process of drug development

2. Reading assignment for Pre-test

1) course syllabus

3. Reference Textbook for self-study in Topic 1

1) Modern Pharmacology   Chapter 1   page 1-8
2) Pharmacology: Principles and Practice   Chapter 1   page 1-7

                                   Chapter 2   page 8-29

4. Group activities

- Discuss and write down a paragraph explaining steps of making herbal drug from a known thai herb
- First select a herb you've known
- Then think, discuss and decide your own processes and write it down

5. Topic post-test

- Write a short paragraph explaining the idea you've got from group activity

Topic 2   Pharmacokinetics: Drug absorption

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain mechanisms underlying drug movement
- Identify factors affecting drug movement
- Explain definition of drug absorption

- Explain factors affecting drug absorption

2. Reading assignment for Pre-test

1) Topic 2 powerpoint
2) Modern Pharmacology   page20-21

3. Reference Textbook for self-study in Topic 2

1) Modern Pharmacology   Chapter 3   page 20-28
2) Goodman and Gilman's   Chapter 1   page 1-4

4. Group activities

- Discuss on the topic of factors affecting drug movement
- Practicing calculations in the topic of ionization

5. Topic Post-test

- write a paragraph summarized what you've done in group activities

Topic 3   Pharmacokinetics: Drug distribution

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain definition of drug distribution and its importance
- Identify factors affecting drug distribution
- Explain meaning and know how to calculate volume of distribution
- Explain roles of protein binding on drug distribution

2. Reading assignment for Pre-test

1) Topic 3 powerpoint
2) Good man and Gilman's page 4-6

3. Reference Textbook for self-study in Topic 3

1) Modern Pharmacology   Chapter 3   page 28-31
2) Goodman and Gilman's   Chapter 1   page 4-6
3) Pharmacology: Principles and Practice   Chapter 7   page 122-124

4. Group activities

- Discussion on the following questions

    What does it mean if Vd of a drug equal to 0.3 L/kg?

    What would it be the reason behind the above Vd?

    What can you expect from using this drug for treating a disease?

5. Topic Post-test

- Write a paragraph answering the questions above

Topic 4   Pharmacokinetics: Drug metabolism

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain concepts of drug metabolism
- Explain steps of drug metabolism and the differences among them
- Give examples of metabolic reaction

2. Reading assignment for Pre-test

1) Topic 4 powerpoint
2) Modern Pharmacology page 34-35

3. Reference Textbook for self-study in Topic 4

1) Modern Pharmacology   Chapter 4   page 34-39
2) Goodman and Gilman's   Chapter 1   page 43-56
3) Pharmacology: Principles and Practice   Chapter 8   page 131-168

4. Group activities

Discuss on the topic and make a summary

5. Topic Post-test

Write a summary of drug metabolism in your own terms

Topic 5   Pharmacokinetics: Drug excretion

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain the possible routes of drug excretion
- Identify the types of drug that will likely be excreted in each route
- Explain mechanism of drug excretion of major routes

2. Reading assignment for Pre-test

1) Topic 5 powerpoint
2) Modern Pharmacology page 39-40

3. Reference Textbook for self-study in Topic 5

1) Modern Pharmacology   Chapter 4   page 39-45

2) Pharmacology: Principles and Practice   Chapter 9   page 175-195

4. Group activities

Discuss and explain of how properties of a drug will relate to its way of excretion

5. Topic Post-test

Write a paragraph summarized from your discussion

Topic 6   Pharmacokinetics: Drug elimination

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1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain the meaning of drug elimination
- Describe processes involved in drug elimination
- Understand and calculate all parameters involved in drug elimination

2. Reading assignment for Pre-test

1) Topic 6 powerpoint
2) Modern Pharmacology page 48-50

3. Reference Textbook for self-study in Topic 6

1) Modern Pharmacology   Chapter 5   page 48-53
2) Goodman and Gilman's   Chapter 1   page 7-13

                                        (clinical pharmacokinetics)

4. Group activities

Discuss and set up an example or more for calculation practice

5. Topic Post-test

Write down those examples and explain how to calculate them

Topic 7   Pharmacodynamics: Dose-response relationship

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1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain definition and importance of dose-response relationship
- Differentiate between graded and quantal dose response
- Explain the meanings of potency and efficacy
- Tell the uses of LDR
- Explain the meaning and significance of therapeutic indices

2. Reading assignment for Pre-test

    1) Topic 7 powerpoint

    2) Modern Pharmacology page 13-15

3. Reference Textbook for self-study in Topic 7

    1) Modern Pharmacology   Chapter 2   page 10-18

    2) Pharmacology: Principles and Practice   Chapter 4   page 63-68

4. Group activities

Discussion to check whether each group member understand the same thing, then make a conclusion on usefulness of dose-response relationship

5. Topic Post-test

Write a paragraph on usefulness of dose-response relationship

Topic 8   Pharmacodynamics: Drug actions

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

-   Classify types of drug action

-   Explain and show examples of different types of drug action

2. Reading assignment for Pre-test

    1) Topic 8 powerpoint

3. Reference Textbook for self-study in Topic 8

    1) Goodman and Gilman's   Chapter 1   page 14-25

4. Group activities

Select a drug or two from Vet Drug Handbook and discuss about their action according to the lecture

5. Topic Post-test

Write a paragraph reporting what you have found out from your discussion

Topic 9   Pharmacodynamics: Receptors

1. Topic objectives – guideline for learning and evaluation

Learning process will help students to be able to:

-   Understand definitions of drug receptors and ligands

-   Describe the difference between affinity and efficacy

-   Describe the difference between agonist and antagonist

-   Understand the mechanisms of drug action based on receptor-mediated

2. Reading assignment for Pre-test

   1) Topic 9 powerpoint

   2) Modern Pharmacology page 10-11

3. Reference Textbook for self-study in Topic 9

   1) Modern Pharmacology   Chapter 2   page 10-18

   2) Goodman and Gilman's   Chapter 1   page 14-16

   2) Pharmacology: Principles and Practice Chapter 4   page 64-69

4. Group activities

   Review and discuss on topic contents

5. Topic Post-test

   Write a short paragraph answering the following questions

   - What are ligands and how they interact with drug receptors?

   - How can drug receptors be classified?

Topic 10   Pharmacodynamics: Signal transduction

1. Topic objectives – guideline for learning and evaluation

   Learning process will help students to be able to:

   -   Explain the difference between cell signaling and signal transduction

   -   Understand principal concepts of cell signaling

   -   Understand relations of receptors and signal transduction

   -   Explain the mechanisms used in signal transduction

2. Reading assignment for Pre-test

   1) Topic 10 powerpoint

   2) Pharmacology: Principles and Practice   page 103-104

3. Reference Textbook for self-study in Topic 10

   1) Pharmacology: Principles and Practice Chapter 6   page 103-111

   2) Goodman and Gilman's   Chapter 1   page 15-20

4. Group activities

   Review and discuss on part of signal transduction

5. Topic Post-test

   Write a short paragraph explaining the possible things that may happen as part of signal transduction.

Topic 11   Pharmacodynamics: Drug interaction

1. **Topic objectives** – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain definition of drug interaction

- Describe possible consequences of drug interaction

- Classify drug interactions and their details

2. **Reading assignment for Pre-test**

1) Topic 11 powerpoint

2) Pharmacology: Principles and Practice   page 303-304

3. **Reference Textbook for self-study in Topic 11**

1) Pharmacology: Principles and Practice   Chapter 12   page 303-322

4. **Group activities**

Look at list of drugs in Vet Drug Handbook and choose a drug for its drug interaction, then discuss to find out the type and consequences

5. **Topic Post-test**

Write a paragraph explaining drug interaction of your selected drug

Topic 12   Pharmacodynamics: Adverse drug reaction

1. **Topic objectives** – guideline for learning and evaluation

Learning process will help students to be able to:

- Explain definition of adverse drug reaction

- Classify adverse drug reaction

- Identify type of an adverse drug reaction

2. **Reading assignment for Pre-test**

1) Topic 12 powerpoint

2) Small Animal Clinical Pharmacology page 41-42

3. **Reference Textbook for self-study in Topic 12**

1) Small Animal Clinical Pharmacology   Chapter 3   page 41-56

1) Pharmacology: Principles and Practice   Chapter 13   page 327-347

4. **Group activities**

Find some examples of adverse drug reactions in Vet Drug Handbook and discuss for their identifications

5. **Topic Post-test**

Write a paragraph showing results of your discussion

Course Syllabus

Second Semester 2011

713 313 Veterinary antimicrobial and chemotherapeutic agents 2 (2-0-2)

For Regular students

Class time   Wednesday   13.00-15.00   VM 1205

Class Instructors   Dr.Korawuth Punareewattana

Class major contents: Antibiotics, Antihistamines, Anti-inflammatory drugs

Subject philosophy: Content-focus, English-integrated, Research-based learning

Processes of Teaching and Learning   13.00-14.00   Lectures

                                      14.00-15.00   Group activity

Webpage for PPT and Textbook download http://home.kku.ac.th/korawut/antibiotics/

Week	Date	Topics
1	Oct 12	Topic 1 - Antibiotics: General Principles
2	Oct 19	Topic 2 - Antibiotics: Susceptibility testing Antibiotic resistance Pharmacokinetics of antibioitcs
3	Oct 26	Topic 3 - Antibiotics: Beta-lactams
4	Nov 2	Topic 4 - Antibiotics: Cephalosporins Other Beta-lactams
5	Nov 9	Topic 5 - Antibiotics: Peptide antibiotics Lincosamides, Pleuromutilins, Streptogramins Macrolides
6	Nov 16	Topic 6 - Antibiotics: Aminoglycosides Tetracyclines Chloramphenicols
7	Nov 23	Topic 7 - Antibiotics: Sulfonamide-Diaminopyrimidines Fluoroquinolones
8	Nov 30	**National Game**
9	Dec 7	**National Game**
10	Dec 14	Topic 8 - Antibiotics: Antibiotic selection
11	Dec 21	**Graduation ceremony**
12	Dec 26-30	**Midterm exam**
13	Jan 4	Topic 9 - Antihistamines

14	Jan 11	Topic 10 - Anti-inflammatory agents
15	Jan 18	Topic 11 – Diuretics
16	Jan 25	**Holiday**
17	Feb 1	Topic 12 – Hormonal drugs
18	Feb 8	Topic 13 – ANS drugs
		Final exam

Course Syllabus

Second Semester 2011

713 313 Veterinary antimicrobial and chemotherapeutic agents 2 (2-0-2)

For Additional students

Class time   **Friday**   **13.00-15.00**   VM 1205

Class Instructors   Dr.Korawuth Punareewattana

Class major contents: Antibiotics, Antihistamines, Anti-inflammatory drugs

Subject philosophy: Content-focus, English-integrated, Research-based learning

Processes of Teaching and Learning   13.00-14.00   Lectures

        14.00-15.00   Group activity

Webpage for PPT and Textbook download http://home.kku.ac.th/korawut/antibiotics/

Week	Date	Topics
1	Oct 14	Topic 1 - Antibiotics: General Principles
2	Oct 21	Topic 2 - Antibiotics: Susceptibility testing Antibiotic resistance Pharmacokinetics of antibioitcs
3	Oct 28	Topic 3 - Antibiotics: Beta-lactams
4	Nov 4	Topic 4 - Antibiotics: Cephalosporins Other Beta-lactams
5	Nov 11	Topic 5 - Antibiotics: Peptide antibiotics Lincosamides, Pleuromutilins, Streptogramins Macrolides
6	Nov 18	Topic 6 - Antibiotics: Aminoglycosides Tetracyclines Chloramphenicols

7	Nov 25	**National Game**
8	Dec 2	**National Game**
9	Dec 9	Topic 7 - Antibiotics: Sulfonamide-Diaminopyrimidines Fluoroquinolones
10	Dec 16	Topic 8 - Antibiotics: Antibiotic selection
11	Dec 23	**Graduation ceremony**
12	Dec 26-30	**Midterm exam**
13	Jan 6	Topic 9 - Antihistamines
14	Jan 13	Topic 10 - Anti-inflammatory agents
15	Jan 20	Topic 11 – Diuretics
16	Jan 27	**Pet Day**
17	Feb 3	Topic 12 – Hormonal drugs
18	Feb 10	Topic 13 – ANS drugs
		Final exam

Teaching Materials

1) <u>Antimicrobial Therapy in Veterinary Medicine</u>. Fourth edition 2006   **main reference**

4) <u>Small animal clinical pharmacology</u> second edition 2008 Edit by Jill E Maddison

6) <u>Veterinary Drug Handbook</u> Sixth edition Edit by DC Plumb

Study Pattern

Before class   - Reading assigned materials

First 10 min   - Pre-test

Next 50 min   - Lecture and discussion on the subject

              - Two ways communication

              - Questions and answers

Next 50 min   - Group activities on topic tutorial and discussion, and writing essay

              - Short presentation from each groups

Last 10 min   - Conclusion and assigning materials for next class

Note on Class activities and English skills

Activities	English Skills				
	Listening	Speaking	Reading	Writing	Pronunciation

Reading assignment			/		
Pre-test			/	/	
Lecture	/				
Q & A during lecture		/			
Group activities	/	/	/	/	/
Writing essay				/	

Evaluation criteria   Grade

Pre-test	10 %	A	>80	
Asking and Answering	5 %	B+	75-79.99	
Essays during classes	20 %	B	70-74.99	
Mid-term	30 %	C+	65-69.99	
Final	30 %	C	60-64.99	
Oral exam	5 %	D+	55-59.99	
		D	50-54.99	