



Course Specification of Veterinary Pharmacology

(2)

I. Course Identification and General Information:						
1	Course Title:	Veterinary Pharmacology (2)				
2	Course Number & Code:	PH345				
3	Credit hours:	C.H				Total
		Theoretical	Practical	Training	Seminar	
		2	1			3
4	Study level/ semester at which this course is offered:	Third Year - Second Semester				
5	Pre –requisite (if any):	PH344				
6	Co –requisite (if any):	None				
7	Program (s) in which the course is offered:	Bachelor of Veterinary Medicine				
8	Language of teaching the course:	English Language				
9	Location of teaching the course:	Faculty of Veterinary Medicine Building				
10	Prepared by:	Dr. Abduraqeb Ali Alshami Dr. Aref saleh Abdulmghni Dr. Saleh Ahmed Alomaisi				
11	Date of approval:					

Prepared by
 Dr. Abdu Alraoof Al-

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II. Course description:

Veterinary pharmacology is defined as the study of the properties of drugs and all aspects of their interaction with living organisms. This course provides a foundation basic principles of pharmacology and an overview of the more commonly prescribed medications as they relate to specific body systems. The focus of this course is on veterinary pharmacology, the pharmacodynamics and pharmacokinetics of veterinary drugs, as well as drugs most commonly used in veterinary medicine, so that the student can develop the necessary vocabulary and understanding of pharmacology to work effectively within a veterinary field. The student will understand mechanisms of drug actions, common drug interactions and side effects. The student also will be able to perform basic mathematical calculations of drug dosages.

III. Intended learning outcomes (ILOs) of the course:

(A) Knowledge and Understanding:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in:
Knowledge and Understanding.

Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding		Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding	
After completing this program, students will be able to:		After completing this course, students will be able to	
A3-	Identifies various causes of animal diseases, animal epidemics and how they can be diagnosed; including common and life-threatening diseases of animals, poultry and fish.	a1-	Illustrates the indications and contraindications of the principal drugs and the interactions between drugs.

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A4-	Describes the foundations and procedural steps for treating all diseases that affect different animals, highlighting the medical conditions that need surgical interventions.	a2-	Identifies the drug residues and how to minimize their hazard effects and how to deal with a case of drug toxicity.
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Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding		Teaching strategies/methods to be used	Methods of assessment
completing this course, students will be able to:		-Lectures using board, data shows and multimedia aids. - Brainstorming. - Dialogue and discussion. - Self-learning by preparing essay and presentations - Practical application (Labs) - Scientific trips -Simulation and demos	-Written exam -Practical exam -Oral exam - Quizzes - Report assignments - Discussion
a1-	Illustrates the indications and contraindications of the principal drugs and the interactions between drugs.		
a2-	Identifies the drug residues and how to minimize their hazard effects and how to deal with a case of drug toxicity.		

(B) Intellectual Skills:

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Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Intellectual skills			
Program Intended Learning Outcomes (Sub- PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Intellectual Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
B2-	Predicts an appropriate medical diagnosis for the most common disease states through analysis of clinical story data and the results of medical examinations of a sick animal.	b1-	Criticize different treatment modalities in order to provide optimum drug therapy for animals.
B4-	Determines the appropriate and effective treatment; evaluates all medications used for each condition.	b2-	Evaluate different adverse drug reactions.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:			
Course Intended Learning Outcomes (CILOs) in Intellectual Skills.		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		-Lectures using board, data shows and multimedia aids. - Brainstorming. - Dialogue and discussion. - Self-learning by preparing essay and presentations - Practical application (Labs) - Scientific trips -Simulation and demos	-Written exam -Practical exam -Oral exam - Quizzes - Report assignment - Discussion
b1-	Criticize different treatment modalities in order to provide optimum drug therapy for animals.		
b2-	Evaluate different adverse drug reactions.		

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(C) Professional and Practical Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Professional and Practical Skills**

Program Intended Learning Outcomes (Sub- PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
C3-	Reads the results of laboratory investigations and diagnostic scans and writes reports and prescriptions for all common cases in a proper way.	c1-	Choose drugs according to specific diseased conditions and the specific causative agent.
C4-	Treat animal patients safely and effectively considering the evaluation of the results, the appropriate modification of the treatment plan and the accurate description of the appropriate medications.	c2-	Handle of veterinary therapeutics problems as drug residues, drug interactions, drug side effects and toxicity...etc

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		-Practical application (Labs)	-Written exam
		-Problem Solving	-Practical exam
c1-	Choose drugs according to specific diseased conditions and the specific causative agent.	-Cooperative learning and working groups	-Oral exam
		-Scientific trips	- Quizzes
c2-	Handle of veterinary therapeutics problems as drug residues, drug interactions, drug side effects and toxicity...etc	- Instruments for drug assay.	- Report assignments
			- Discussion

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(D) General / Transferable Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **General and Transferable skills**

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in Transferable skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
D1-	Communicates effectively with Professional colleagues and animal owners and expresses his ideas clearly and objectively.	d1-	Utilize library, computer and other resources to acquire, apply scientific knowledge in reports or presentations.
D3-	Practices problem-solving, negotiation, supervision and veterinary medical management skills and writing research reports efficiently and professionally.	d2-	Work in team and apply time management principles effectively.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		-Self-learning by preparing essay and presentations (computer and faculty library)	- Achievement of learning outcomes
d1-	Utilize library, computer and other resources to acquire, apply scientific knowledge in reports or presentations.	- Cooperative learning and working groups - Scientific visits	- Evaluating student presentations. - Practical examination - Report assignments
d2-	Work in team and apply time management principles effectively.	- discussions - Assignments	- Discussion - Note performance

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I. Course Content:					
1 – Course Topics/Items:					
a – Theoretical Aspect					
Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Chemotherapy of microbial diseases	a1, a2, b1, b2, c1, c2	-Introduction to chemotherapy, Classification of antibacterials, Resistance of M.O to antibacterial, mechanism of resistance, method of transfer bacterial resistance. - B-Lactam antibiotics (Penicillin, Cephalosporins) - Aminoglycoside, aminocyclitol and tetracycline antibiotics. - Sulfonamides - Chloramphenicol and macrolide antibiotics. - Quinolones and fluoroquinolones - Lincosamide, polypeptide and miscellaneous antibiotics. - Basis of antibacterial combination. Types of antibacterial combinations. .	3	6
2	Chemotherapy of parasitic diseases	a1, a2, b1, b2, c1, c2	-Antinematodes - Anticestodes and antitrematodes - Drugs act on blood parasites	2	4

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			- Anticoccidial drugs - External antiparasitic drugs		
3	Drugs acting on cardiovascular system	a1, a2, b1, b2, c1, c2	Introduction, Inotropic drug: cardiac glycosides, Sympathomimetic, Parasympatholytic, xanthine derivatives, Antidysrhythmic agent : Quinidine, procainamide, Lidocaine, Vasodilators : Glyceryl trinitrate, Isosorbide dinitrate, Hydralazine and minoxidil, Coagulants and anticoagulant, Fibrinolytic, Antithrombosis, Hematinics.	2	4
4	Drugs acting on urinary system	a1, a2, b1, b2, c1, c2	Introduction, Diuretics: diuretics acting on early distal tubule, loop diuretics: Potassium – sparing diuretics : Carbonic anhydrase inhibitor : osmotic diuretics : urolith treatment: urinary acidifiers: urinary alkalinizers : xanthine oxidase inhibitors.	2	4
5	Drug acting on the respiratory system	a1, a2, b1, b2, c1, c2	Introduction, expectorant, mucolytics, anti-tussives, anti-asthmatic drugs, bronchodilators, antiinflammatory agents, mast cell stabilizers, respiratory stimulant, decongestants. .	2	4
6	Drugs acting on reproductive system	a1, a2, b1, b2, c1, c2	Introduction, pituitary gland hormones: Anterior pituitary hormones, posterior pituitary hormones, pancreas hormone, Thyroid gland hormones, Adrenal cortex hormones, Adrenocortical insufficiency, Hyperadrenocorticism, Gonadotrophin – releasing hormone (GnRH), Sex Hormone, Drugs affecting uterine motility, Uterine muscles stimulants , Uterine muscle relaxants.	2	4

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7	Drug toxicology and Drugs affecting metabolism	a1, a2, b1, b2, c1, c2	- Drug toxicity. -Hormones, vitamins and minerals affecting metabolism.	1	2
Number of Weeks /and Units Per Semester				14	28

b- Training Aspect:				
Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Neuromuscular blocking (on the frog)	a1, a2, b1, b2, c1, c2	1	2
2	Calculation of drug dosage	a1, a2, b1, b2, c1, c2	1	2
3	Xylazine-ketamine anesthesia in rabbits. Xylazine effects in sheep	a1, a2, b1, b2, c1, c2	2	4
4	Dose response relationships(ED50, LD50, TI)	a1, a2, b1, b2, c1, c2	1	2
5	Anticonvulsants	a1, a2, b1, b2, c1, c2	1	2
6	Determination of blood cholinesterase activity	a1, a2, b1, b2, c1, c2	1	2
7	Organophosphate poisoning in rats or mice	a1, a2, b1, b2, c1, c2	1	2
8	Diuretics	a1, a2, b1, b2, c1, c2	1	2
9	Asprin toxicity(comparison with acetaminophen)	a1, a2, b1, b2, c1, c2	1	2
10	Veterinary pharmaceutical preparations	a1, a2, b1, b2, c1, c2	2	4

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11	Neurobehavioral effects of drugs and toxicants	a1, a2, b1, b2, c1, c2	1	2
12	Effect of drugs on the perfused heart	a1, a2, b1, b2, c1, c2	1	2
Number of Weeks /and Units Per Semester			14	28

<p>II. Teaching strategies of the course:</p> <ul style="list-style-type: none"> • Lectures using board, data shows and multimedia aids. • Group discussions • Literature Review • Brainstorming • Practical Seminars • Individual assignments • Self-learning by preparing essay and presentations (computer and faculty library) • Cooperative learning
<p>3-Assessment Methods:</p> <p>-Written exam</p> <p>-Practical exam</p> <p>-Oral exam</p> <p>-Quizzes</p> <p>- Report assignments</p> <p>- Discussion</p> <p>Grading Scale:</p> <p>Grades are awarded on a scale from A to F, where A is the best grade (90-100) and F is a fail (<50)</p>

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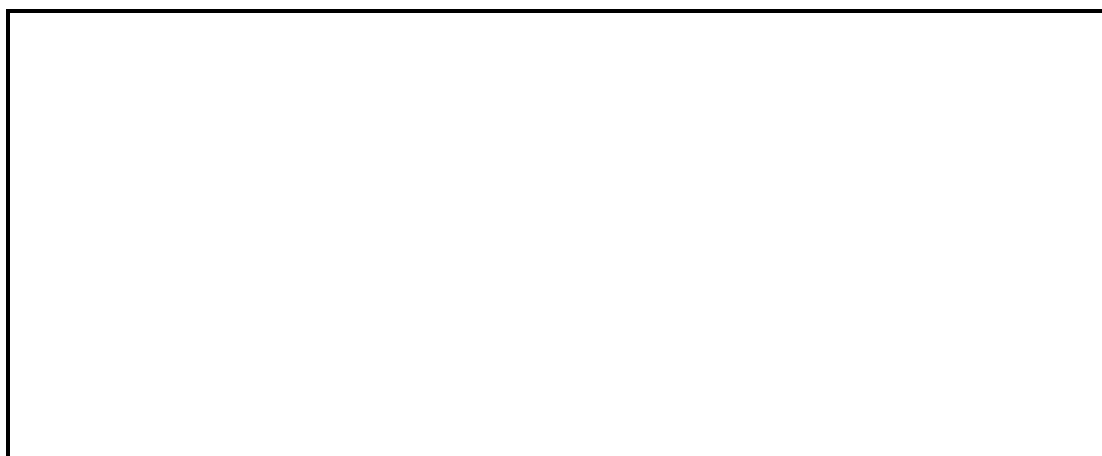
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III. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1	Participation, quizzes and assignments	2-14	10	10%	a1, a2, b1, b2, c1, c2, d1
2	Mid-Term Exam	8	10	10%	a1, a2, b1, b2, c1, c2
3	Mid-Term Practical Exam	8	10	10%	a1, a2, b1, b2, c1, c2
4	Final Practical Exam	15	10	10%	a1, a2, b1, b2, c1, c2
5	Oral Exam	16	5	5%	a1, a3, a4, b1, b2, c2
6	Final Exam	16	55	55%	a1, a2, b1, b2, c1, c2
Total			100	100%	

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IV. Students' Support:	
Office Hours/week	Other Procedures (if any)
Saturday-Wednesday from 8:00 a.m.-2 p.m.	Student can contact me via email

V. Learning Resource (MLA style or APA style)s:	
Required Textbook(s) (maximum two)	
	- Pharmacology for Veterinary Technicians. Mosby-Year Book, Ins.USA - Veterinary Applied Pharmacology and therapeutics. Brander, G. C.; Pugh, D. M. and Bymater, R.J., English Language Book Society and Longman, London.
Recommended Readings and Reference Materials	
Essential References	
	-Veterinary Pharmacology and Therapeutics, 7th Edition, edited by H.Richard Adams, low State University Press/ Ames. - Veterinary Applied Pharmacology and therapeutics. Brander, G. C.; Pugh, D. M. and Byr R.J., English Language Book Society and Longman, London.
Electronic Materials and Web Sites etc.	
	<ul style="list-style-type: none"> • J. Vet. Pharmacology and Therapeutics. • Am. J. Vet. Res • http://www.vetmed.wsu.edu/depts.-vcpl/ • http://www.cc.nih.gov/ • http://www.acvcp.org/

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	<ul style="list-style-type: none"> • http://www.clinicalpharmacology.com/ • http://www.vetnet.net/ • http://www.summitpk.com/pksolutions.htm • http://www.analyticon.co.uk/pkpdpage.htm • http://www.ncbi.nlm.nih.gov
	Other Learning Material:

X. Course Policies:	
1	Class Attendance: MANDATORY TO ATTEND ALL COURSE LECTURES
2	Tardy: Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	Exam Attendance/Punctuality: Attendance is mandatory; absence is accepted with valid excuse.
4	Assignments & Projects: All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse.
5	Cheating: Not tolerated and may lead to EXPELLING the student from the program
6	Plagiarism:

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	Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	Other policies: 1. All devices must be on silent or at least on vibration during lectures/labs 2. Before any exam (written, oral) we must check student's identity (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. 3. Any of type/ form of cheating is not allowed no matter what. 4. Maintain silence during lectures/exam and disturbance is not allowed. For any questions students should raise their hand and wait for permission to talk.

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Course Plan of Veterinary Pharmacology (2)

I. Information about Faculty Member Responsible for the Course:						
Name of Faculty Member		Office Hours				
Location & Telephone No.		SAT	SUN	MON	TUE	WED
E-mail						

II. Course Identification and General Information:						
1	Course Title:	Veterinary Pharmacology (2)				
2	Course Number & Code:	PH345				
3	Credit hours:	C.H				Total
		Th.	Seminar	Pr.	F. Tr.	
		2	-	1		3
4	Study level/year at which this course is offered:	Third Year / Second Semester				

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5	Pre –requisite (if any):	PH344
6	Co –requisite (if any):	None
7	Program (s) in which the course is offered	Bachelor of Veterinary Medicine
8	Language of teaching the course:	English Language
9	System of Study:	Regular / Semesters
10	Mode of delivery:	Lectures and Practical
11	Location of teaching the course:	Faculty of Veterinary Medicine Building

III. Course Description:

Veterinary pharmacology is defined as the study of the properties of drugs and all aspects of their interaction with living organisms. This course provides a foundation basic principles of pharmacology and an overview of the more commonly prescribed medications as they relate to specific body systems. The focus of this course is on veterinary pharmacology, the pharmacodynamics and pharmacokinetics of veterinary drugs, as well as drugs most commonly used in veterinary medicine, so that the student can develop the necessary vocabulary and understanding of pharmacology to work effectively within a veterinary field. The student will understand mechanisms of drug actions, common drug interactions and side effects. The student also will be able to perform basic mathematical calculations of drug dosages.

IV. Intended learning outcomes (ILOs) of the course:

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After completing this course, students will be able to:

- a1- Illustrates the indications and contraindications of the principal drugs and the interactions between drugs.
- a2- Identifies the drug residues and how to minimize their hazard effects and how to deal with a case of drug toxicity.
- b1- Criticize different treatment modalities in order to provide optimum drug therapy for animals.
- b2- Evaluate different adverse drug reactions.
- c1- Choose drugs according to specific diseased conditions and the specific causative agent.
- c2- Handle of veterinary therapeutics problems as drug residues, drug interactions, drug side effects and toxicity...etc.
- d1- Utilize library, computer and other resources to acquire, apply scientific knowledge in reports or presentations.
- d2- Work in team and apply time management principles effectively.

I. Course Content:

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Chemotherapy of microbial diseases	1,2,3	6
2	Chemotherapy of parasitic diseases	4,5	4

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3	Drugs acting on cardiovascular system	6,7	4
4	Mid-Term Exam	8	2
5	Drugs acting on urinary system	9,10	2
6	Drug acting on the respiratory system	11,12	4
7	Drugs acting on reproductive system	13,14	2
8	Drug toxicology and Drugs affecting metabolism	15	2
9	Final Exam	16	2
Number of Weeks /and Units Per Semester		16	32

b- Training Aspect:			
Order	Training Tasks	Week Due	Contact hours
1	Neuromuscular blocking (on the frog)	1	2
2	Calculation of drug dosage	2	2
3	Xylazine-ketamine anesthesia in rabbits. Xylazine effects in sheep	3,4	4
4	Dose response relationships(ED50, LD50, TI)	5	2
5	Anticonvulsants	6	2
6	Determination of blood cholinesterase activity	7	2

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	Mid-Term Exam	8	2
7	Organophosphate poisoning in rats or mice	9	2
8	Diuretics	10	2
9	Asprin toxicity(comparison with acetaminophen)	11	2
10	Veterinary pharmaceutical preparations	12,13	4
11	Neurobehavioral effects of drugs and toxicants	14	2
12	Effect of drugs on the perfused heart	15	2
	Final Exam	16	2
Number of Weeks /and Units Per Semester		16	32

II. Teaching strategies of the course:
<ul style="list-style-type: none"> • Lectures using board, data shows and multimedia aids. • Group discussions • Literature Review • Brainstorming • Practical Seminars • Individual assignments • Self-learning by preparing essay and presentations (computer and faculty library) • Cooperative learning
III. Assessment Methods:
<ul style="list-style-type: none"> -Written exam -Practical exam -Oral exam -Quizzes - Report assignments

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- Discussion

Grading Scale:

Grades are awarded on a scale from A to F, where A is the best grade (90-100) and F is a fail (<50).

No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Participation, quizzes and assignments	2-14	10	10%
2	Mid-Term Exam	8	10	10%
3	Mid-Term Practical Exam	8	10	10%
4	Final Practical Exam	15	10	10%
5	Oral Exam	16	5	5%
6	Final Exam	16	55	55%
Total			100	100%

IV. Learning Resources:	
1- Required Textbook(s) (maximum two).	
	<ul style="list-style-type: none"> - Pharmacology for Veterinary Technicians. Mosby-Year Book, Ins.USA - Veterinary Applied Pharmacology and therapeutics. Brander, G. C.; Pugh, D. M. and Bymater, R.J., English Language Book Society and Longman, London.

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2- Essential References.	
	<p>-Veterinary Pharmacology and Therapeutics, 7th Edition, edited by H.Richard Adams, State University Press/ Ames.</p> <p>- Veterinary Applied Pharmacology and therapeutics. Brander, G. C.; Pugh, D. M. and Bymater, R.J., English Language Book Society and Longman, London.</p>
3- Electronic Materials and Web Sites etc.	
	<ul style="list-style-type: none"> • J. Vet. Pharmacology and Therapeutics. • Am. J. Vet. Res • http://www.vetmed.wsu.edu/depts.-vcpl/ • http://www.cc.nih.gov/ • http://www.acvcp.org/ • http://www.clinicalpharmacology.com/ • http://www.vetnet.net/ • http://www.summitpk.com/pksolutions.htm • http://www.analyticon.co.uk/pkpdpage.htm • http://www.ncbi.nlm.nih.gov

V. Course Policies:	
1	<p>Class Attendance:</p> <p>MANDATORY TO ATTEND ALL COURSE LECTURES</p>

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2	<p>Tardy:</p> <p>Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.</p>
3	<p>Exam Attendance/Punctuality:</p> <p>Attendance is mandatory; absence is accepted with valid excuse.</p>
4	<p>Assignments & Projects:</p> <p>All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse.</p>
5	<p>Cheating:</p> <p>Not tolerated and may lead to EXPELLING the student from the program</p>
6	<p>Plagiarism:</p> <p>Not tolerated AT ALL and may lead to EXPELLING the student from the program</p>
7	<p>Other policies:</p> <ol style="list-style-type: none"> 1. All devices must be on silent or at least on vibration during lectures/labs 2. Before any exam (written, oral) we must check student's identity (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. 3. Any of type/ form of cheating is not allowed no matter what. 4. Maintain silence during lectures/exam and disturbance is not allowed. <p>For an questions students should raise their hand and wait for permission to talk.</p>

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