



Course Specification of Veterinary Pharmacology

(1)

I. Course Identification and General Information:						
1	Course Title:	Veterinary Pharmacology (1)				
2	Course Number & Code:	PH344				
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 - Frist Semester				
5	Pre –requisite (if any):	FR114				
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:					

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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:	
A1-	Demonstrate a sound knowledge and understanding of concepts and	a1-	Show knowledge and understanding of the terms relating to pharmacology and

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	principles of general culture, basic science, and that support veterinary medicine.		the pharmacokinetics and pharmacodynamics.
A2-	Clarifies basic concepts, principles, and theories related to animal production, animal health and nutrition, behavior management, breeding and care that is related to animal ethical codes.	a2-	Describes the list and classify common drugs used in veterinary medicine and understand actions, mechanism of action, adverse effects and precautions for use of each drug.
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:		<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -Written exam -Practical exam -Oral exam - Quizzes - Report assignments - Discussion
a1-	Show knowledge and understanding of the terms relating to pharmacology and the pharmacokinetics and pharmacodynamics.		
a2-	Describes the list and classify common drugs used in veterinary medicine and understand actions, mechanism of action, adverse effects and precautions for use of each drug.		

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(B) Intellectual Skills:			
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:	
B1-	Competently practices analytical and critical thinking skills in studying and assessing health problems and reading the results of animal medical examinations that is related to sciences.	b1-	Analyze information about drugs in professional manner.
B3-	Design appropriate nursing and treatment care plans for different diseases that affect animals, prioritizing treatment.	b2-	Establish a good link between drugs and their economy use in the veterinary field and Select the drug of choice.
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	-Written exam -Practical exam -Oral exam - Quizzes - Report assignment - Discussion
b1-	Analyze information about drugs in professional manner.		
b2-	Establish a good link between drugs and their economy use in the veterinary field and Select the drug of choice.		

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		-Simulation and demos	
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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:	
C1-	Accurately records a comprehensive pathological story of a sick animal including information on healthy behavior and the necessary checks.	c1-	Determine drugs actions and mechanism of actions in vitro and in vivo.
C2-	Practices practical, diagnostic, clinical and research skills, including the collection of samples in various fields of veterinary medicine and related sciences, in a safe and effective manner, considering the ethics of the profession.	c2-	Prepare some pharmaceutical preparations essential for the field.

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) -Problem Solving	-Written exam -Practical exam
c1-	Determine drugs actions and mechanism of actions in vitro and in vivo.	-Cooperative learning and working groups	-Oral exam

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c2-	Prepare some pharmaceutical preparations essential for the field.	-Scientific trips - Instruments for drug assay.	- Quizzes - 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-	Communicate with owners and add the language and expression of veterinary field.
D2-	Develops his scientific, professional and research capabilities and follow what is emerging in his field of specialization and using computer applications and information and communication technology.	d2-	Utilize library, computer and other resources to acquire, apply scientific knowledge in reports or presentations.

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 - Evaluating student presentations. - Practical examination
d1-	Communicate with owners and add the language term and expression of veterinary field.		

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d2-	Utilize library, computer and other resources to acquire, apply scientific knowledge in reports or presentations.	<ul style="list-style-type: none"> - Cooperative learning and working groups - Scientific visits - discussions - Assignments 	<ul style="list-style-type: none"> - Report assignment - Discussion - Note performance
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IV. Course Content:					
1 – Course Topics/Items:					
a – Theoretical Aspect					
Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Principles of pharmacology	a1, a2, b1, b2, c1, c2	Definition, Routes of drug administration, Methods of transport of drug across cell membrane, Pharmacokinetics, absorption, effect of PH on drug absorption, determination of how much drug will be found on either side of a membrane, Factors which effect drug absorption, Bioavailability (F), Factors that influence bioavailability distribution, Factors effect on the drug distribution, Volume of distribution (Vd), Metabolism or biotransformation, Metabolism pathways, Factors with affect biotransformation, Elimination, clearance of drug,	3	6

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			pharmacodynamics, Types of receptors, Characteristic features of receptor, Types of drug response, Therapeutic index, Agonists, Antagonists.		
2	Drugs acting on autonomic nervous system	a1, a2, b1, b2, c1, c2	Introduction, Neurotransmitters, The parasympathetic nervous system, Cholinergic drugs, Anticholinergic drugs, Ganglionic blocking drugs, Blockade of neuromuscular transmission (muscle relaxant), Sympathetic nervous system, Adrenergic agonists (sympathomimetics), Adrenergic antagonists, α -adrenergic blockers, β -adrenergic blockers.	2	4
3	Drugs acting on central nervous system	a1, a2, b1, b2, c1, c2	Excitatory neurotransmitter, Inhibitory neurotransmitter, CNS stimulant, CNS depressant, Narcotics, Sedative, Anticonvulsants, Tranquilizer: Hypnotics, Analgesics: Narcotic analgesic, non-narcotic analgesic, General anesthesia, Stage of general anesthesia, Types of general anesthetic agent, Local anesthetics, mechanism of action, Clinical techniques of local anesthesia, example of local anesthetic agents.	2	4
4	Drugs affecting on gastrointestinal function	a1, a2, b1, b2, c1, c2	Introduction, Sialagogues, Antisialagogues, Appetizer, Antacids, Carminative,	3	6

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			Antizymotic, Emetics, Antiemetic, Cholagogues, Stomachic, laxatives, Adsorbant, Astringents, Antidiarrheal agents, antispasmodics, Gastrointestinal prokinetics – stimulants.		
5	Autacoids and anti-inflammatory drugs	a1, a2, b1, b2, c1, c2	Introduction, Histamine, Mechanism of action, pharmacological action, Histamine agonists, Histamine antagonist ,Serotonin (5 HT), Pharmacological action, Serotonin agonists, Serotonin antagonists, Eicosanoids, Synthesis of important prostaglandins and leukotriens, Classification of prostanoid receptors, Plasma kinnins, Pharmacological effects of kinnins, Inhibitors of cyclooxygenase, Other autacoids agent .	2	4
6	Dermatopharmacology	a1, a2, b1, b2, c1, c2	introduction, topical anti-infective agents, topical antibacterial agents, topical antifungal agent, topical antiviral agents, ectoparasiticides, emollients, astringents, skin disinfectants, keratolytics, caustic agents, counter irritants, Corticosteroid.	2	4
Number of Weeks /and Units Per Semester				14	28

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b- Training Aspect:				
Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Metrology	a1, a2, b1, b2, c1, c2	1	2
2	Nature and source of drugs	a1, a2, b1, b2, c1, c2	1	2
3	Pharmaceutical preparations and drug forms	a1, a2, b1, b2, c1, c2	1	2
4	Routes of drug administration	a1, a2, b1, b2, c1, c2	2	4
5	Variations in drug response (species and individual)	a1, a2, b1, b2, c1, c2	2	4
6	Microsomal enzymes activity induction and drug response	a1, a2, b1, b2, c1, c2	1	2
7	Excretion of drugs and Prescription writing	a1, a2, b1, b2, c1, c2	1	2
8	Dispensing	a1, a2, b1, b2, c1, c2	1	2
9	Action of drugs on the eyes	a1, a2, b1, b2, c1, c2	1	2
10	Action of drugs on isolated guinea pigs ileum	a1, a2, b1, b2, c1, c2	1	2
11	Drugs and effects on the rabbit intestine	a1, a2, b1, b2, c1, c2	1	2
12	Drugs and effects on the rabbit uterus	a1, a2, b1, b2, c1, c2	1	2
Number of Weeks /and Units Per Semester			14	28

V. Teaching strategies of the course:
<ul style="list-style-type: none"> • Lectures using board, data shows and multimedia aids. • Group discussions • Literature Review • Brainstorming

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- Practical Seminars
- Individual assignments
- Self-learning by preparing essay and presentations (computer and faculty library)
- Cooperative learning

3-Assessment Methods:

- Written exam
- Practical exam
- Oral exam
- Quizzes
- Report assignments
- 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)

VI. 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
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

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4	Final Practical Exam	15	10	10%	a1, a2, b1, b2, c1, c2
5	Oral Exam	16	5	5%	a1, a2, b1, b2, c1, c2
6	Final Exam	16	55	55%	a1, a2, b1, b2, c1, c2
Total		100	100%		

VII. 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

VIII. 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, Iowa 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.	

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	<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
	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.

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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. For any questions students should raise their hand and wait for permission to talk.

Course Plan of Veterinary Pharmacology (1)

I. Information about Faculty Member Responsible for the Course:	
Name of Faculty Member	Office Hours

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Location & Telephone No.		SAT	SUN	MON	TUE	WED	THU
E-mail							

II. Course Identification and General Information:						
1	Course Title:	Veterinary Pharmacology (1)				
2	Course Number & Code:	PH344				
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 / Frist Semester				
5	Pre –requisite (if any):	FR114				
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:

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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- Show knowledge and understanding of the terms relating to pharmacology and the pharmacokinetics and pharmacodynamics.
- a2- Describes the list and classify common drugs used in veterinary medicine and understand actions, mechanism of action, adverse effects and precautions for use of each drug.
- b1- Analyze information about drugs in professional manner.
- b2- Establish a good link between drugs and their economy use in the veterinary field and Select the drug of choice. .
- c1- Determine drugs actions and mechanism of actions in vitro and in vivo.
- c2- Prepare some pharmaceutical preparations essential for the field.
- d1- Communicate with owners and add the language term and expression of veterinary field.
- d2- Utilize library, computer and other resources to acquire, apply scientific knowledge in reports or presentations.

V. Course Content:

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Principles of pharmacology	1,2,3	6
2	Drugs acting on autonomic nervous system	4,5	4

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3	Drugs acting on central nervous system	6,7	4
4	Mid-Term Exam	8	2
5	Drugs affecting on gastrointestinal function	9,10,11	6
6	Autacoids and anti-inflammatory drugs	12,13	4
7	Dermatopharmacology	14,15	4
8	Final Exam	16	2
Number of Weeks /and Units Per Semester		16	32

b- Training Aspect:

Order	Training Tasks	Week Due	Contact hours
1	Metrology	1	2
2	Nature and source of drugs	2	2
3	Pharmaceutical preparations and drug forms	3	2
4	Routes of drug administration	4,5	4
5	Variations in drug response (species and individual)	6,7	4
6	Mid-Term Exam	8	2
7	Microsomal enzymes activity induction and drug response	9	2
8	Excretion of drugs and Prescription writing	10	2
9	Dispensing	11	2
10	Action of drugs on the eyes	12	2

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11	Action of drugs on isolated guinea pigs ileum	13	2
12	Drugs and effects on the rabbit intestine	14	2
13	Drugs and effects on the rabbit uterus	15	2
14	Final Exam	16	2
Number of Weeks /and Units Per Semester		16	32

VI. Teaching strategies of the course:

- 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

VII. Assessment Methods:

-Written exam

-Practical exam

-Oral exam

-Quizzes

- Report assignments

- 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).

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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%

VIII. 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.
2- Essential References.	

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 Ass. Prof. Dr. Abdu Alraoof Al-
 Shaukany

Dean of Development
 Center & Quality
 Assurance

Rector of Sana'a University
 Prof. Dr. Al-Qassim Mohammed Abbas



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	<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

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

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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. For an questions students should raise their hand and wait for permission to talk.

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