

University of Agriculture, Faisalabad

Department of Veterinary Pathology

Course Outline

Program	DVM	Course Instructor	Prof. Dr. M. Tariq Javed Dr. Shafia Tehseen Gul Mr. Imran Mr. Nauman
Year/Semester	3 rd semester	E-mail	mtjaved@uaf.edu.pk
Name of the Course	General Veterinary Pathology		
Course No.	PATH 203		
Credit Hours	4 (3-1)		
Prerequisites	Semester first and second courses		
Follow Up	Systemic Veterinary Pathology, Clinical Pathology, Poultry Pathology,		
Category	Core Course		
Aims	General Pathology is an important course in the veterinary medical education and it help understand the disease processes which is the ultimate goal over which the treatment is based. The understanding of the course of general pathology make a sound background of students and helps to identify the disease process, its intensity and nature and thus aids in the effective treatment of the suffering animal.		
Objectives	At the completion of the course the student are expected to be able to: 1. Understand various mechanisms of disease. 2. Identify and name various abnormalities/lesions. 3. Differentiate various lesions both grossly and microscopically.		

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Syllabus		<p>Theory</p> <p>1) Introduction to historical background. 2) Terminology 3) Cell injury and cell death; different types, mechanism and sequel. 4) Disturbances of mineral metabolism and pigmentation. 5) Disturbances of growth. 6) Disturbances of circulation. 7) Inflammation, repair and healing of wounds and fractures. 8) Neoplasia. 9) Causes of neoplasia. 10) Pathogenesis of neoplasia. 11) Classification of neoplasia. 12) Immunopathology.</p> <p>Practical</p> <p>1) Demonstration of General, Gross and Microscopic picture of different pathological conditions. 2) Various Staining, histochemical and immunohistochemical techniques.</p>			
Text Books		<p>1) Kumar, V., R.S. Cotran and S.L. Robbins, 2003. Robbins Basic Pathology, 7. th Ed., Saunders, Philadelphia, Pennsylvania, USA.</p> <p>2) Jones, T.D., R.D. Hunt and N.W. King, 1997. Veterinary Pathology. 6. th Ed., Williams and Wilkins, USA.</p> <p>3) Slausan, D.O. and B.J. Cooper, 2002. Mechanisms of Disease: A textbook of Comparative General Pathology. 3. rd Ed. Mosby Inc. A Harcourt Sciences Company, St Lousi MO 63146.</p> <p>4) Irfan, M., 1997. A Text book of Veterinary General Pathology. 1. st . Ed., University of Agriculture, Faisalabad.</p> <p>5) Macfarlane, P.S., R. Reid and R. Callander, 1999. Pathology Illustrated, 4. th Ed., Churchill Livingstone, Edinburgh, UK.</p>			
Reference Material		<p>1) Javed, M. Tariq, 2001. Basic Pathology, a text book on comparative general pathology, Edition Ist, Published by Maktaba-e-Danishwaran Publications, 8-Alfazal Market, Urdu Bazar, Lahore 2) http://www.geocities.com/mtjaved_uaf 3) http://www.brisbio.ac.uk/ 4) http://155.37.5.42/NAV/Title 5) http://www.med.uiuc.edu/PathAtlas/</p>			
Instructional Aids/ Resources		<p>1) White board and board Markers/ 2) Black board and Chalk 3) Overhead Projector. 4) Transparency sheets (useable with laser pointer) 5) Multimedia 6) Soft Boards 7) Computer and CDs Questioning and explanations</p>			
Teaching Strategies		<p>1) Lectures 2) Topic discussion 3) Discussion 4) Close circuit TV aided Discussion demonstration and discussion. 5) Questioning and explanations</p>			
Assessment Criteria	Marks in %	Sessional	Mid	Final	Total 100%
	Theory	Quizzes	Paper (22.5%)	Paper (45.0%)	75 %
		Assignments (7.5%)			
	Practical			Practical paper and performance	25 %
Result	<ul style="list-style-type: none"> Results will be displayed after one week of Mid and Final Exams. Mid term and final term papers will be shown to the students and discussed. 				
Recommendation		Seminars or lectures from experts are desired if time permits and opportunity arises.			

Title of Course GENERAL VETERINARY PATHOLOGY

Lect. #	WEEK	CONTENTS TO BE COVERED	NAME OF BOOK / ARTICLE etc.	PAGE NO.
	1	ENROLMENT		
1	2	Introduction, History,	Slauson and Cooper, (2002)	2-4, 7-9
2	2	Important terms,	Kumar et al. (2003)	4,
3	2	Adaptation: Atrophy, Metaplasia	Slauson and Cooper (2002)	22-23, 30-31
4	3	Hyperplasia, Hypertrophy, Hypoplasia	Slauson and Cooper (2002)	31-33, 300-302
5	3	Cell Injury: Pathogenesis of cell injury, Hypoxic cell injury	Slauson and Cooper (2002)	49 50-55
6	3	Cell injury due to membrane damage	Slauson and Cooper (2002)	56-59
7	4	Reversible cell injury – cell swelling and hydropic change	Kumar et al., (2003)	11-12
8	4	Hyalin Mucoid degeneration	Slauson and Cooper, (2002)	65
9	4	Intracellular lipid accumulation	Slauson and Cooper, (2002)	65-66
10	5	Amyloid and amyloidosis Glycogen	Slauson and Cooper (2002) Kumar et al., (2003)	69-73 18-19
11	5	Necrosis Apoptosis	Kumar et al., (2003)	12-13 13-14
12	5	Types of necrosis: Coagulative necrosis Caseous necrosis Liquefactive necrosis Fat necrosis, Zenker's necrosis	Slauson and Cooper (2002)	44-46 48 44-46 44-46 44-46
13	6	Consequences of cell injury	Slauson and Cooper (2002)	48-49
14	6	Autolysis, Difference between autolysis and necrosis,	Kumar et al., (2003)	12-13
15	6	Gangrene, Difference between gangrene and necrosis	Slauson and Cooper (2002)	48
16	7	Exogenous and endogenous pigments Melanin Ceroid Haemosiderin Lipofuscin	Kumar et al., (2003) Slauson and Cooper (2002)	19-20 67-69
17	7	Bilirubin Different types of jaundice	Slauson and Cooper (2002) Kumar et al., (2003)	69 518-519
18	7	Calcification Gout	Slauson and Cooper (2002) Kumar et al., (2003)	69 682-686
19	8	MID TEST		
20	8	Circulatory Disturbances: Hyperaemia, Congestion	Slauson and Cooper (2002)	78-83
21	8	Oedema	Slauson and Cooper (2002)	129-136
22	9	Haemorrhage	Slauson and Cooper (2002)	83-88
23	9	Thrombosis	Slauson and Cooper (2002)	89-112

24	9	Embolism	Slauson and Cooper (2002)	113-119
25	10	Postmortem thrombi	Slauson and Cooper (2002)	111-112
26	10	Hypovolaemic Shock, Haemorrhagic Shock, Septic Shock	Slauson and Cooper (2002)	87, 193
27	10	Inflammation: Causes	Slauson and Cooper (2002)	146
28	11	Inflammatory process	Slauson and Cooper (2002)	148-154
29	11	Biochemical mediators: General features of mediators, Vasoactive amines (histamine and serotonin), Kinins, Arachidonic acid metabolites	Slauson and Cooper (2002)	206-214
30	11	Biochemical mediators: Complement system, Nitric oxide, others	Slauson and Cooper (2002) Kumar et al. (2003)	214-218 230 34-40
31	12	Cells of inflammation: Neutrophils, Lymphocytes	Slauson and Cooper (2002)	167-172 180-183
32	12	Macrophage, Eosinophils, Basophils, others	Slauson and Cooper (2002)	176-180 172-174 174-176 183-185
33	12	Types of inflammatory exudates	Slauson and Cooper (2002)	154-159
34	13	Severity	Slauson and Cooper (2002)	149-150
35	13	Manifestation of acute inflammation.	Slauson and Cooper (2002)	160-166
36	13	Chronic Inflammation	Kumar et al., (2003)	41-43
37	14	Healing by parenchymal regeneration.	Slauson and Cooper (2002)	226-230
38	14	Healing by connective tissue replacement, Role of growth factors.	Slauson and Cooper (2002)	230-237
39	14	Fever, Release of lysosomal enzymes and tissue injury	Kumar et al. (2003) Slauson and Cooper (2002)	41, 202-206
40	15	Neoplasia Epidemiological considerations	Slauson and Cooper (2002)	306
41	15	Nomenclature and classification	Slauson and Cooper (2002)	306-315
42	15	Morphological Characteristics	Slauson and Cooper (2002)	315-316
43	16	Grading and staging	Slauson and Cooper (2002)	316-317
44	16	Pathogenesis	Slauson and Cooper (2002)	317-331
45	16	causes	Slauson and Cooper (2002)	366-376
46	17	Genetic aspect of oncogenesis	Slauson and Cooper (2002)	331-341
47	17	Mechanism of metastasis	Slauson and Cooper (2002)	341-356
48	17	Tumour immunology	Slauson and Cooper (2002)	359-366

Reference/Text Books:

- 1) Slausan, D.O. and B.J. Cooper, (2002). Mechanisms of Disease: A textbook of Comparative General Pathology. 3rd Ed. Mosby Inc. A Harcourt Sciences Company, St Louis MO 63146.
- 2) Kumar, V., R.S. Cotran and S.L. Robbins, (2003). Robbins Basic Pathology, 7th Ed., Saunders, Philadelphia, Pennsylvania, USA.
- 3) Jones, T.D., R.D. Hunt and N.W. King, 1997. Veterinary Pathology. 6th Ed., Williams and Wilkins, USA.
- 4) Irfan, M., 1997. A Text book of Veterinary General Pathology. 1st Ed., University of Agriculture, Faisalabad.
- 5) Macfarlane, P.S., R. Reid and R. Callander, 1999. Pathology Illustrated, 4th Ed., Churchill Livingstone, Edinburgh, UK.

Suggested for further Reading

1. Javed, M. Tariq, 2001. **Basic Pathology**, a text book on comparative general pathology, Edition Ist, Published by Maktaba-e-Danishwaran Publications, 8-Alfawal Market, Urdu Bazar, Lahore.
2. Khan, M.Z., 1995. **General Pathology**, Mahmood Masood Printers, Jinah Colony Faisalabad.
3. <http://sites.google.com/site/drmtariqjaved>
4. <http://www.brisbio.ac.uk/>
5. <http://155.37.5.42/NAV/Title.HTM>
6. <http://www.med.uiuc.edu/PathAtlasf/titlePage.html>
7. <http://www.uniud.it/drmm/anpat/pathgallery/>
8. <http://www.pathguy.com/~lulo/gallery.htm>
9. <http://alf3.urz.unibas.ch/pathopic/e/intro.htm>
10. <http://erl.pathology.iupui.edu/c603/>
11. <http://www.path.uiowa.edu/virtualslidebox/>

Assignment No. 1	History of Medicine / Pathology due date:20.9.2015
Assignment No. 2	Ultrastructural changes in cell Injury will be announced later
Assignment No. 3	Recent developments in the field of neoplasia will be announced later

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**PRACTICAL SCHEDULE FOR GENERAL VETERINARY PATHOLOGY
PATH-203**

Week 1	ENROLMENT
Week 2	Introduction to Pathology Lab.
Week 3	Preservation and fixation of morbid tissues,
Week 4	General rules for identification of gross changes in various organs/tissues
Week 5	Preparation of microscopic slides (Tissue processing, embedding and staining)
Week 6	Demonstration of microscopic slides, degenerative changes
Week 7	Demonstration of microscopic slides, degenerative changes
Week 8	Demonstration of microscopic slides of various infiltrations
Week 9	Demonstration of microscopic slides of various infiltrations
Week 10	Demonstration of microscopic slides of different types of necrosis
Week 11	Demonstration of microscopic slides of different types of necrosis
Week 12	Demonstration of microscopic slides with vascular disturbances
Week 13	Demonstration of microscopic slides with vascular disturbances
Week 14	Demonstration of microscopic slides with changes in growth
Week 15	Demonstration of microscopic slides showing inflammatory changes in various organs
Week 15	Demonstration of microscopic slides showing inflammatory changes in various organs
Week 16	Demonstration of important neoplasms of animals
Week 17	PRACTICAL EXAMINATION