A meeting of the National Curriculum Revision Committee for Veterinary Pathology to finalize the draft syllabus prepared in its preliminary meeting was held on June 12-14, 2001 at UGC, Regional Centre, Lahore. The following attended the meeting:

1. Dr. Wali Muhammad Bhatti
   Convener
   Chairman/Associate Professor
   Department of Veterinary Pathology
   Sindh Agriculture University, Tandojam.

2. Dr. Muhammad Zaman Khan
   Member
   Professor (Retired)
   Nominee of Pakistan Veterinary Medical Council, Islamabad.

3. Dr. Muhammad Anwar
   Member
   Department of Veterinary Pathology
   Institute of Animal Husbandry and Vet. Sciences,
   Gomal University, D.I. Khan

4. Dr. M. Akhtar Qureshi,
   Member
   Assistant Professor,
   University College of Agriculture,
   Rawalakot, AJK.

5. Dr. Shakeel Akhtar Khan
   Member
   Associate Professor
   Section of Veterinary Pathology
   College of Veterinary Sciences, Lahore.

6. Dr. Asim Aslam
   Member
   Lecturer,
   Section of Veterinary Pathology
   College of Veterinary Sciences, Lahore.
The meeting started with recitation from the Holy Quran by Dr. Ahrar Ahmad Khan.

Mr. Muhammad Javed Khan, Director Curriculum, UGC, welcome the participants and briefed them of the obligations of the Commission for review, revision and development of curricula as per provisions of the Act of Parliament, 1976. He suggested the committee to go through the curriculum of D.V.M., M.Sc. (Hons.) and Ph. D. degrees in the subject proposed in first meeting held in April, 2001 and review the same in light of comments and suggestions as received from different universities/institutions and finalize its recommendations to make it available to universities before 30th June, 2001. He stated that the objectives behind the whole exercise of reviewing Vet. Sciences curricula to inculcate the latest knowledge amongst the future graduates in the field of Veterinary Pathology which is considered as the core subject and a diagnostic tool for confirmation of diseases in livestock, poultry and pet animals. The Director informed the members that the present exercise of curriculum revision for Agriculture, Basic Sciences, Applied Sciences, Engineering and Technology, Animal Husbandry and Veterinary Sciences is being carried out with the financial support of Ministry of Science and Technology.

Prof. Dr. Altaf Ali G. Shaikh, Adviser (Curriculum and Training) introduced the members of the committee of the different academic programmes of the commission aimed at enhancing the academic capabilities of in-service university/college teachers. He suggested to the members to devise the minimum baseline curriculum which every university/college imparting education in this economically important sector should offer. He emphasized inclusion of lastest books in list of suggested readings so that new concepts and ideas are imparted by future graduates.

The Committee unanimously appointed Dr. Wali Muhammad Bhatti as its convener and Dr. Ahrar Ahmad Khan as Secretary. Prof. Bhatti in his opening remarks thanked the members and the University Grants Commission for reposing confidence in him and for providing this national forum wherein Veterinary Pathologists can discuss wide range of issues they are confronted with and suggest measures for resolution of their common problems. He assured the commission of his own and on behalf of the members of the committee of full cooperation and intellectual contribution in revamping the curriculum. He stressed the members to avail this unique opportunity for developing lasting bonds of friendship and close interaction amongst them. The committee, after discussing the existing curricula of Vet. Pathology at graduate and postgraduate levels agreed to the uniform draft curricula as detailed below:
SCHEME OF STUDIES
FOR
GRADUATE COURSES OF VETERINARY PATHOLOGY

<table>
<thead>
<tr>
<th>Title of Course</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>General Pathology</td>
<td>5(3-4)</td>
</tr>
<tr>
<td>Systemic Pathology</td>
<td>5(3-4)</td>
</tr>
<tr>
<td>Clinical Pathology</td>
<td>2(0-4)</td>
</tr>
<tr>
<td>Poultry Pathology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Poultry Clinic</td>
<td>2(0-4)</td>
</tr>
</tbody>
</table>

GENERAL REMARKS

a) **General Pathology** 5(3-4)
   To be offered during 3rd semester (or 1st term of 2nd year) when the students have already taken courses on anatomy, histology, physiology and biochemistry.
   This course is being taught at University of Agriculture, Faisalabad, College of Veterinary Sciences, Lahore, Sindh Agriculture University, Tandojam and Institute of Animal Husbandry and Veterinary Sciences, Gomal University, D.I. Khan.

b) **Systemic Pathology** 5(3-4)
   To be offered during 4th semester (or 2nd term of 2nd year) when the students have learned General Pathology.
   This course is being taught at University of Agriculture, Faisalabad, College of Veterinary Sciences, Lahore, Sindh Agriculture University, Tandojam and Institute of Animal Husbandry and Veterinary Sciences, Gomal University, D.I. Khan.

c) **Clinical Pathology** 2(0-4)
   To be offered during 5th semester (or 1st term of 3rd year) when the students have learned General and Systemic Pathology.
   This course is being taught at University of Agriculture, Faisalabad, College of Veterinary Sciences, Lahore, Sindh Agriculture University, Tandojam and Institute of Animal Husbandry and Veterinary Sciences, Gomal University, D.I. Khan.
d) **Poultry Pathology**  
3(2-2)  
To be offered during 6th semester (or 2nd term of 3rd year).

At present this course is being taught at University of Agriculture, Faisalabad and College of Veterinary Sciences, Lahore and Institute of Animal Husbandry & Veterinary Sciences, Gomal University, D.I. Khan but not at Agriculture University, Tandojam.

e) **Poultry Clinic**  
2(0-4)  
To be offered during 8th semester (or 1st term of 4th year).

At present this course is being taught at University of Agriculture, Faisalabad and College of Veterinary Sciences, Lahore and Institute of Animal Husbandry & Veterinary Sciences, Gomal University, D.I. Khan but not at Agriculture University, Tandojam.

f) **Meat Hygiene and Inspection**  
2(1-2)  
At present this course is being taught by the Department of Parasitology. More suitably it should be offered by the Department of Pathology.
DETAIL OF COURSES

GENERAL PATHOLOGY 5(3-4)

Theory

Practical
Demonstration of basic tissue alterations and autolytic changes on postmortem and slaughter house specimens. Demonstration of tissue section cutting and staining techniques. Demonstration of tissue slides of pathological conditions.

Books Recommended

SYSTEMIC PATHOLOGY 5(3-4)

Theory
Congenital and developmental anomalies. Pathology of various systems including alimentary, respiratory, urinary, circulatory, lymphatic, reproductive, nervous, musculoskeletal and skin and appendages. Metabolic diseases.
Practical

Demonstration of postmortem procedure in small and large animals. Practice to recognize gross and histopathological changes affecting different systems of the body. Visits to slaughter house.

Books Recommended

CLINICAL PATHOLOGY 2(0-4)

Practical


Urinalysis. Faecal examination. Liver and kidney function tests. Exfoliative cytology. Skin scrappings. Visit(s) to diagnostic laboratories.

Books Recommended
Theory

Practical
Demonstration of postmortem procedures in poultry. Demonstration of common laboratory tests in poultry disease diagnosis. Investigation of field outbreaks of disease. Visit(s) to poultry farms, hatcheries and Research Institute(s).

Books Recommended

POULTRY CLINIC 2(0-4)

Practical
Books Recommended


<table>
<thead>
<tr>
<th>Title of Course</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Advanced General Pathology</td>
<td>4(3-2)</td>
</tr>
<tr>
<td>Advanced Clinical Pathology</td>
<td>3(1-4)</td>
</tr>
<tr>
<td>Necropsy Practice</td>
<td>2(0-4)</td>
</tr>
<tr>
<td>Diagnostic Techniques in Pathology</td>
<td>3(1-4)</td>
</tr>
<tr>
<td>Oncology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Pathology of Intoxications</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Ruminants Pathology</td>
<td>4(3-2)</td>
</tr>
<tr>
<td>Advanced Poultry Pathology-I</td>
<td>4(3-2)</td>
</tr>
<tr>
<td>Advanced Poultry Pathology-II</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Equine Pathology</td>
<td>3(2-2)</td>
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<tr>
<td>Camel Pathology</td>
<td>3(2-2)</td>
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<tr>
<td>Canine and Feline Pathology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Wildlife Pathology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Fish Pathology</td>
<td>3(2-4)</td>
</tr>
<tr>
<td>Special Problem</td>
<td>1(1-0)</td>
</tr>
<tr>
<td>Seminar</td>
<td>1(1-0)</td>
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</tbody>
</table>
GENERAL REMARKS

1. The M.Sc (Hons) students should fulfil the following requirements.
   i) Course work including:
      a) 24-25 credit hours of major discipline i.e., Veterinary Pathology.
      b) 10-11 credit hours of minor courses from related departments.
      c) Compulsory (deficiency) course of Biochemistry and Statistics.
   ii) Thesis based on research work.

2. After a thorough discussion on course work to be taken from major department it was decided that it should consist of some basic courses of Pathology, some courses on Animal Pathology and Poultry Pathology. This will provide an opportunity to postgraduate students to make choice between livestock and poultry for specialization. After putting this scheme into practice for few years, it will be evaluated whether the Department of Veterinary Pathology needs to offer two degrees i.e., Animal Pathology and Poultry Pathology separately or not.

3. The Ph.D. students should fulfil the following requirements.
   i) Course work including:
      a) 24-25 credit hours of major discipline i.e., Veterinary Pathology.
      b) 10-11 credit hours of minor courses from related departments.
      c) Compulsory (deficiency) course of Biochemistry and Statistics.
      d) Courses taken under M.Sc.(Hons) must not be repeated in Ph.D. course work.
   ii) Comprehensive examination (written and oral) should be according to the University rules.
   iii) Thesis based on research work.
DETAIL OF COURSES

ADVANCED GENERAL PATHOLOGY 4(3-2)

Theory

Practical
Proficiency to recognize and describe gross lesions and histopathological changes in tissues. Proficiency in differentiating between retrogressive, inflammatory/proliferative and neoplastic changes.

Books Recommended

ADVANCED CLINICAL PATHOLOGY 3(1-4)

Theory
Practical

Books Recommended

NECROPSY PRACTICE 2(0-4)

Practical

Books Recommended
Practical


Books Recommended

ONCOLOGY 3(2-2)

Theory


Practical

Differences between benign and malignant tumors. Differentiation of neoplasia from non-specific swellings and growths. Gross and histologic identification of common tumors of different animals.

Books Recommended


PATHOLOGY OF INTOXICATIONS 3(2-2)

Theory

Practical
Recognition of lesions induced by toxins and their differential diagnosis from non-toxic lesions. Laboratory methods for diagnosis of intoxications.

Books Recommended

RUMINANTS PATHOLOGY 4(3-2)

Theory
Practical
Recognition and differential diagnosis of gross and histopathological lesions in various organs. Biochemical changes in various diseases. Seminars. Livestock Farms/slaughter house visit(s).

Books Recommended

ADVANCED POULTRY PATHOLOGY-I 4(3-2)

Theory

Practical
Avian anatomy and physiology in relation to diagnosis of poultry diseases. Gross and histopathological features of various diseases of poultry. Proficiency to conduct postmortem examination. Seminar on current research work on poultry. Farm visit(s). Visit to Veterinary Research Institute(s).

Books Recommended
ADVANCED POULTRY PATHOLOGY-II

Theory

Practical

Books Recommended

EQUINE PATHOLOGY

Theory
Practical
Recognition and differential diagnosis of gross and histopathological lesions in various organs. Biochemical changes in various diseases. Seminar. Visit(s) to stud farms.

Books Recommended

CAMEL PATHOLOGY 3(2-2)

Theory

Practical
Recognition and differential diagnosis of gross and histopathological lesions in various organs. Biochemical changes in various diseases. Seminar. Slaughter house visit(s).

Books Recommended
Theory

Practical

Books Recommended

WILDLIFE PATHOLOGY
Theory

Practical
Handling of birds. Examination of blood, urine, skin scraping and faeces. Examination of biopsy and other morbid material.

Books Recommended


FISH PATHOLOGY 3(2-2)

Theory

Practical
Sampling and despatch of sick fish for laboratory investigation. Freshness determination of dead fish. Blood changes associated with diseases. Recognition and differential diagnosis of gross and histopathological lesions in various organs. Seminars on common problems of fish. Fish farm visit(s).

Books Recommended

SPECIAL PROBLEM 1(1-0)

SEMINAR 1(1-0)
RECOMMENDATIONS

1. There should be a composite degree for Veterinary/Animal Husbandry graduates at University of Agriculture, Faisalabad, Gomal University, D.I. Khan and NWFP Agricultural University, Peshawar as being practiced at Sindh Agricultural University, Tandojam.

2. The objectives and scope of education of Veterinary Pathology keeping in view of National requirements may further be explored by a panel of renowned Veterinary Pathologists in Workshop(s)/Conference(s) preferably at the platform of University Grants Commission.

3. Foreign scholarships for MSc/PhD degree programmes, in disciplines which are offering these degrees in local Institutions, should not be encouraged. However, 9 months to one year foreign trainings/post doctoral fellowships be encouraged for in-service professionals to refresh their professional knowledge.

4. Annual Conference/Workshop for teachers and researchers in Veterinary Pathology may be arranged under the umbrella of UGC with rotation at various Institutions of the country.

5. UGC should develop a monitoring system to assess uniformity in syllabi of Veterinary Pathology at different Universities both at undergraduate and postgraduate levels.

6. UGC should develop a rating/evaluation system for Department of Veterinary Pathology involved in different institutions of Pakistan on the basis of annual performance and achievements. UGC should give some incentives to good teachers.

7. Teachers supervising Ph.D. students in Veterinary Pathology other than indigenous Ph.D. Scholarship Scheme (UGC) may be given honorarium/incentives equivalent to those covered under indigenous scheme.

8. A national academy for university teachers training should be established by the UGC, where short training on teaching skills, administrative skills, budgeting and accounts, etc should be imparted to university teachers.

9. Facilities for teaching should be regularly assessed by the UGC for each department in relation to basic infra-structure, the number of students, student:teacher ratio, etc.

10. Meat Hygiene and Inspection course, at present, is being offered by the Department of Parasitology, more suitably, it should be offered by the Department of Pathology.

11. UGC should ensure that the recommended books are available in libraries of each institution.

12. Centre of Excellence in the field of Veterinary Pathology may be established at National Level.
The intellectual inputs by expatriate Pakistanis working in universities and R&D institutions of technically advanced countries are also invited to contribute and their views are incorporated where considered appropriate by the National Curriculum Revision Committee (NCRC). The National Curriculum Revision Committee (NCRC). Minutes 9.19.16. CMMEB, #G165, 4:00 p.m. Present (underlined) were: Gretchen Arnold, Jonathan Black, Elizabeth Bradley, Megan Bray, Donna Chen, Aaron Freilich, Jose Gurrola, Maryellen Gusic, John Hickman, Barry Hinton, Donald Innes, Robin LeGallo, Keith Littlewood, Vishal Madaan, Nancy McDaniel, Mark Moody, Selina Noramly, Juan Olazagasti, Steven Powell, Theresa Schlager, Neeral Shah, Ryan Smith, Linda Waggoner-Fountain, Casey White, Bill Wilson, Rachel Kon, Stephen Wolf, Jessica Lukacs, Lee Eschenroeder, Elizabeth. Graham, Bob