SUBJECT REVIEW REPORT

DEPARTMENT OF VETERINARY PATHOBIOLOGY

FACULTY OF VETERINARY MEDICINE AND ANIMAL SCIENCE

UNIVERSITY OF PERADENIYA

28th February to 01st March 2008

Review Team :

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1. SUBJECT REVIEW PROCESS

This review was carried out on the 28th, 29th of February and the 17th of March, 2008 by a team comprising the following persons.
Dr (Ms) Senani Williams, University of Kelaniya
Prof MU Jayasekara, APIIT (formerly University of Sabaragamuwa)
Prof SSE Ranawana, Wayamba University

The terms of reference for the review team were according to those described in the Quality Assurance Handbook of the CVCD and UGC (page 13 to 16 and Annex E).
The team based its findings on the following documents and activities:

1. A desk study of the Self Evaluation Report prepared by the Head of Department and Staff
2. Meeting with Department academic staff for an in-depth assessment of the contents of the curriculum and the teaching/learning methods used
3. Observation of classroom teaching
4. A survey of facilities – classroom and laboratory - available for teaching
5. Visit to CADAAR
6. Interactions with the following personnel:
7. The Dean of the Faculty
8. The non-academic staff of the Department
9. Veterinary Undergraduate students from the 2nd and 3rd years
10. Academic Staff from the Clinical Departments in the Faculty
11. Post-graduate students
12. Perusal of miscellaneous documents relating to teaching activities

2. BRIEF HISTORY OF THE UNIVERSITY, FACULTY AND DEPARTMENT

The Department under review is one of five Departments in the Faculty of Veterinary Medicine and Animal Science(FVMAS) which, in turn, is one of seven Faculties at the University of Peradeniya. The University of Peradeniya, established on 1st July, 1942, presently has a developed infrastructure, trained academic staff, equipped laboratories and all the specialized units and accessories of a complete, modern University. It is the largest in terms of student enrolment and the most complete with respect to the number and range of Faculties, in Sri Lanka. It is also the only residential University in the Island located in a non-urban, exceptionally pleasant setting with a mild climate.

The FVMAS is the only Faculty in the Sri Lankan University system that offers a degree program in Veterinary Science. University education in Veterinary Science commenced in Sri Lanka in the year 1947 with the establishment of a Department of Veterinary Science in the University of Ceylon. At the outset, students followed the medical curriculum in Anatomy, Physiology, Biochemistry, general Pharmacology and Pathology with their counterparts at the Faculty of Medicine in the University of Ceylon in Colombo. The specialized subjects in Veterinary pathology and clinical subjects were taught at Peradeniya. Since 1966, with the establishment of a separate Faculty of Medicine at Peradeniya, all veterinary undergraduate training has been carried out at Peradeniya

In the year 1973, the single Department of Veterinary Science was expanded to three Departments of study, namely, Veterinary Preclinical, Paraclinical and Clinical Studies, upgraded as the School of Veterinary Science and included with Medical and Dental Schools to form one Faculty. In the early 1980s, the undergraduate training in Veterinary Science was

accorded full-faculty status with an additional Department, namely, Animal Science. At the same time, the newly formed Department of Veterinary pre-clinical studies undertook all the teaching of basic subjects part of which had hitherto had been taught at the Faculty of Medicine. In October 2000, the FVMAS was restructured and the Departments renamed as Basic Veterinary Sciences (BVS), Veterinary Pathobiology(VPB), Veterinary Clinical Studies (CLS) and Farm Animal Production and Health (FAPH). Finally, in July, 2007 a separate Department of Veterinary Pharmacology and Public Health (VPHP) was formed to give the present structure.

The students in Veterinary Science pass in stages first through the Department of Basic Sciences, then the VPB and VPHP before passing on to the two Departments dealing with clinical and animal production aspects. With the revision in year 2000, there was also a change in the architecture of the course; the teaching of pre-clinical subjects which occupied nearly 2 years up to that time, was reduced to one year with the paraclinical subjects spread over the next two years.

All five Departments contribute to the undergraduate program. The role of the first three Departments is essentially to prepare the students for the clinical and farm training. This structure is common to many professional courses, in particular, Medicine and Dental Science and different from those in the Science or Arts Faculties in which the individual Departments are usually based on disciplines. In this context, it is somewhat difficult to isolate the role of the VPB as it contributes only a part to the final product. It would have been more appropriate if the entire Faculty program could be assessed rather than individual Departments. The task of the review team, however, was understood as making an assessment of the success of the program in the DVPB in teaching the subjects assigned.

The Department of Veterinary Pathobiology (DVPB) is now responsible for teaching pathology and the related subjects, Veterinary Microbiology, Veterinary parasitology and immunology. These important subjects had been taught from the inception as specialized Veterinary Subjects at Peradeniya so that the curriculum and the necessary facilities and are well established.

General Observations

The teaching in the DVPB is not an end in itself. Their task may be described as "to take students who have learnt the normal structure and function in domestic animals and to teach them the pathological processes that are brought about by invasive organisms and other agents", to prepare them for the later clinical years. The 4 disciplines taught in the DVPB namely, Pathology, Parasitology, Microbiology and Immunology are taught over 2 semesters in the 2nd year of the 4 year degree program and examined at the end of that year. We estimated that the contribution of the DVPB to the degree program amounts to about 17% of student contact hours and 13% of the final examination marks

The report prepared by the DVPB has several shortcomings among which are that the curriculum is not adequately described and the intended learning outcomes (ILO) have not been classified on the basis of knowledge or skills. The curriculum is now being revised under the IRQUE-QEF project with the aim of improving the relevance and quality of the BVSc training programme to meet the emerging needs of the nation as well as to introduce semester based course unit system. The new curriculum is most likely to come into effect in 2009.

3. AIMS AND LEARNING OUTCOMES

3.1. Aims

The stated aims of the Second BVSc programme are;

1. To impart a sound knowledge on the common abnormal conditions and their origins, that occur among domestic, pet, wild and aquatic animal species.
2. To identify different types of abnormalities that occur in the animal body.
3. To impart knowledge to students in order to make them correlate between the Paraclinical and Clinical aspects of diseases.

Table 2. Courses offered by the Department of Veterinary Pathobiology.

Letter code	Code no.	Subject title	Academic semester
VPB	211 214 213 212	Pathology Parasitology Microbiology Immunology	3
VPB	221 224 223	Pathology Parasitology Microbiology	4
VPB	321	Pathology	6

3.2. Learning Outcomes

Parasitology

On successful completion of the Parasitology courses during semesters 3 and 4, students will;

- be able to explain the mode/s of transmission, pathogenesis and clinical signs of common helminth infections.
- be able to describe the basic biology, direct and indirect effects of arthropod parasites of domestic animals.
- be able to describe the basic morphology, mode of transmission, pathogenesis and clinical signs, epidemiology and control of Protozoan parasites of domestic animals.
- be able to identify eggs, larvae and adult stages of common helminth parasites in domestic animals.
- be able to collect appropriate samples for laboratory tests to diagnose parasitism and to interpret the laboratory findings.
- be able to describe the zoonotic potential of parasites of domestic animals.
- be able to implement strategic control measures based on an understanding of the epidemiology of helminth, protozoan and arthropod parasites of domestic animals.

Pathology

On successful completion of the Pathology courses during semesters 3, 4 and 6, students will:

- be able to identify and describe the general responses of tissues to injury and infection.
- be able to describe the possible causes, explain the pathogenesis and recognise the morphological and functional changes that are characteristic of common tumours.
- be able to describe the causes, pathogenesis, morphological changes and clinical consequences of diseases affecting the respiratory and cardiovascular systems.
- be able to describe the causes, pathogenesis, morphological changes and clinical consequences of diseases affecting the alimentary, haemopoietic, nervous, musculoskeletal, integumentary and reproductive systems and the eye and ear.
- be able to interpret the common clinical chemistry and haematological parameters used in veterinary clinical practice.
- be able to describe causes, pathogenesis, morphological changes and clinical consequences of common diseases affecting poultry and fish.

Microbiology

On successful completion of the Microbiology courses during semesters 3 and 4, students will;

- be able to describe the classification, structure and genetics of micro-organisms (bacteria, virus and fungi)
- be able to describe the factors influencing growth and be able to explain the methods of quantification of micro organisms.
- be able to select appropriate sterilization and disinfection methods to destroy microbes.
- be able to describe the host-microbe interactions, pathogenesis, zoonotic potential (if any) and economic impact of microbial infections affecting livestock and pet animals.
- be able to collect and despatch appropriate samples to the laboratory according to the standard microbiological procedures/precautions.
- be able to perform appropriate conventional/serological/molecular biological tests to diagnose microbial infections.
- be able to interpret the results in context with the clinical picture.
- be able to implement appropriate preventive and control measures against microbial diseases of domestic animals.

Immunology

On successful completion of the Immunology course during semester 3, students will;

- be able to explain the antigenicity, active, passive, and innate immunity.
- be able to describe the cellular and humoral immune responses against pathogens and neoplastic cells, and the strategies adopted by pathogen to evade host immune responses.
- be able to explain principles, procedures and limitations of sero-diagnostic tests; and be able to interpret sero-diagnostic data.
- be able to describe the role of the vaccines in the prevention of infectious diseases and the reasons for vaccination failures.

4. FINDINGS OF THE REVIEW TEAM

4.1 Curriculum: Design, content and review

From the inception of the BVSc program, the teaching of paraclinical subjects had been a strong point, not least since the first teacher, Prof CA McGaughey was an internationally renowned microbiologist and pathologist whilst parasitology was taught with dedication by two eminent scientists, namely, Professors P Seneviratne and ST Fernando. The recent change to a more practical approach in teaching, by avoiding lengthy taxonomy and introducing a priority-based content in which the more prevalent and clinically important diseases are stressed, is a welcome change. These changes have been made over the years in the traditional curriculum to orient it more towards clinical aspects. The recent change in curriculum in which students are introduced to clinical work during the 2nd year has made the courses more relevant and interesting to them.

Overall, the curriculum is comprehensive and the learning outcomes are sound. The program is at a suitable academic level with sufficient depth and breadth in coverage. Students in the clinical years were satisfied with the content of the material taught by the DVPB and considered all of it relevant to their clinical work. The curriculum was first documented in the year 1992 and has subsequently been reviewed several times. In the current review that is taking place, no major revisions are envisaged. The evolution of the curriculum at different stages, however, has not been properly documented.

Due to the gap year between the teaching of pathobiology and the clinical studies, most students are said to forget the basics of pathobiology by the time they start their final year clinical appointments. Spreading the teaching of pathobiology over 2 years with assessments closer to the clinical year would help to overcome this problem. Closer links between the two departments (VPB and VCS) need to be established, ideally through an academic who would liaise between the two Departments by carrying out post mortems and pathological follow-up of clinical cases.

The increased workload of students during the 3rd semester with subjects other than the core curriculum seems to affect the learning of the VPB subjects. Seven subjects to be studied in the 3rd semester created a heavy burden on the student such that even Saturdays were utilized for lectures. Clearly, there is a need to reschedule these subjects in a more rational manner.

Considering all the above, the Review Team judged the Curriculum Design, Content and Review aspect as GOOD

4.2 Teaching, Learning and Assessment Methods

Conventional time-tested methods of teaching and learning are used which have generally proved effective in the past. These are lectures, laboratory practical classes, clinical classes, post-mortem examinations and tutorials. The relatively large number of practical classes – 2 : 1 ratio of lectures to practicals - increases the student teacher contact hours. Lecture outlines should ideally be given as handouts prior to each lecture. The microbiology department gives assignments which helps the student to refer many text books.

New methods which employ computer assisted technologies and group learning methods which allow for more student-centred learning need to be introduced. The use of such new methods of teaching help to display more learning material such as photographs, videos of

photographs and to link them with specimens and clinical cases in a very meaningful manner.. Use of multimedia could have made a difference to the teaching with addition of photographs of clinical features and pictures of the causative agent. These reinforce the relevance of learning as well as help recall at a later date.

At present, only parasitology presentations are available at the IT centre. Performance of post-mortems on clinical cases, help students to identify pathological processes. Incorporation of clinics for teaching of the disease processes helps the students to learn pathology in the correct context. Post mortem examinations, however, are apparently conducted by the junior-most staff member. If a senior teacher with the necessary experience demonstrates these skills, the students would understand better as well as benefit from that experience. Visit to the clinics by pathobiology students help to reinforce the laboratory based teaching as well as give experience in specimen collection, transport and processing

Practical workbooks are used to identify weaker students, as well as their grasp of basic concepts of the subject. The teaching of three laboratory based subjects namely, pathology, microbiology and parasitology simultaneously, optimizes the knowledge of the causative agents responsible for disease and the effects produced by them.

There is optimal use of the student laboratory for different disciplines by using microscopes without duplication of resources and space. The microscopes in the department are relatively old and have not been properly maintained. The main problems are lack or poor light source, fungus growing on lenses, and oil emersion lenses not being cleaned properly following use. The fact that high humidity in Peradeniya does not help this situation very much. The speaker system in the laboratory also does not function and as the teacher stands behind the teaching microscope in a separate cubicle it is difficult to hear what he or she says.

There are only four hours of formalized tutorials conducted for the entire year. Tutorials are important for students to ask questions and clear their doubts. This is also a good opportunity to check basic concepts of subject matter as well as to establish a good rapport with the student.

Formal assessment at the end of each semester is in place but there is no early detection scheme in place to identify weaker students. It takes 3 weeks to conduct the entire exam and 2 months for the exam marks to be released. As it is a bar exam, the students are quite stressed by the end of the exam.

Considering all the above, the Review Team judged the Teaching, Learning and Assessment Methods aspect as SATISFACTORY.

4.3 Quality of Students, including Student Progress and Achievements

In general, the students on entry to the VPB program have the basic pre requisite knowledge to follow the pathobiology subjects taught in the second year. The partial bar at the end of the first year and the lack of eligibility to sit the 2nd BVSc without completion of the first year exam reinforces the quality of the students. Progress is monitored at the end of the first semester by an in-course assessment and at the end of the year by the 2nd BVSc exam at the end of the year. The system does not allow the early monitoring of student progress; this is evident only following the minor examination at the end of the 1st semester. Students felt, however, that they had progressed well through the course and that all the material taught are relevant – neither too much nor too little.

Considering all the above the Review Team judged this aspect as SATISFACTORY

4.4 Extent and Use of Student Feedback

An evaluation of teachers is carried out, but on an irregular basis, and documentation was available. It was claimed that interactions with students during practical classes gave some valuable feedback but again in an informal manner. There is no dedicated student/staff liaison committee and there does not seem to be any formal mechanisms for students to present their grievances. It is clear that systems of obtaining student feedback need to be formalized and properly documented.

Considering all the above the Review Team judged this aspect as SATISFACTORY

4.5 Postgraduate Studies

The Department contributes to the MVSc courses offered by the Faculty. The Department also had several post-graduate research students registered for MPhil and PhD degrees. Qualified and experienced staff is available to give research guidance. Individual supervision is provided with adequate attention and time devoted to them. Students are funded through a variety of research grants which the academic staff have been successful in obtaining. The research laboratories are well equipped and managed.

The only drawback to the post-graduate research program was that student completion rates were poor. Only half the students complete their PG research degrees due to more lucrative offers from the private sector The Post graduate research is not balanced between the subjects being strongest in parasitology and weakest in pathology. This imbalance could be attributed to the fact that zoology and microbiology graduates are able to carry out research in parasitology and microbiology respectively but pathology needs qualified Veterinary Graduates many of whom do not opt for research.

Adequate seating space and other facilities such as a common room were not available for research students. The excellent laboratories available at CADAAR are not optimally utilized for research activities..

Considering all the above the Review Team judged this aspect as GOOD

4.6 Peer Observation

There is no peer observation practiced except scrutiny of examination papers. There are no formal procedures for observing teaching of internal or external staff. The academic staff realize the value of commencing such a system.

Considering all the above the Review Team judged this aspect as UNSATISFACTORY

4.7 Skills Development

The students are likely to develop many skills during the large number of practical classes conducted during the year. There is, however, no clear strategy for skills development since the required skills have not been clearly identified or listed in the intended learning outcomes. Since Practical tests are part of the examination, the acquisition of some skills is evaluated. There is no evidence that prospective employers are consulted regarding the skills needed.

The Department has well-equipped laboratories and since all the disciplines taught deal with a similar goal, namely laboratory diagnosis of disease, it is in a position to develop a good coordinated program of skill development in this area.
Considering all the above the Review Team judged this aspect as SATISFACTORY

4.8 Academic Guidance and Counselling:

Academic guidance is strictly not needed within the DVPB since the students have no real options. Weak students may need some extra help, however, and this can only be done if such students are identified early. No such system is presently in place. With regard to student counseling, the University and the Faculty has a system in place. There are 3 additional counselors in each Department of study but none of them have received any formal training on counseling.
Considering all the above the Review Team judged this aspect as SATISFACTORY

5. CONCLUSIONS

The main strengths and weaknesses identified in each of the sections during course of this review are summarized below:

1. Curriculum Design, Content and Review:

Strengths/good practices
Changes have been made over the years in the traditional curriculum to orient it more towards clinical aspects.

Weaknesses
The curriculum and its development has not been properly documented

2. Teaching, Learning and Assessment Methods

Strengths/good practices
Visit to the clinics help to reinforce the laboratory based teaching as well as give experience in specimen collection, transport and processing.

Weaknesses
New methods which employ computer assisted technologies and group learning methods which allow for more student-centred learning need to be introduced

3. Quality of Students including Student Progress and Achievements

Strengths/good practices
The students have basic pre requisite knowledge to follow the pathobiology subjects taught in the second year.

Weaknesses
There is no attempt to identify the weaker students at the time of entry and early in the course.

4. Extent and Use of Student Feedback

Strengths/good practices

A teacher evaluation is carried out, but on an irregular and informal basis.

Weaknesses

Systems of obtaining student feedback need to be formalized and properly documented

5. Post-graduate Studies

Strengths/good practices

The Department has several post-graduate research students registered for MPhil and PhD degrees. Individual supervision is provided with adequate attention to them

Weaknesses

Post-graduate research programs are not balanced among the disciplines

6. Peer Observation

Strengths/good practices

DVPB realizes the importance of peer observation of all aspects of teaching, learning and assessment

Weaknesses

It is not currently practiced

7. Skills Development

Strengths/good practices

Well-equipped laboratories and a large number of practical classes ensure the teaching of transferable skills

Weaknesses

The skills to be imparted have not been clearly identified, listed nor conveyed to students.

8. Academic Guidance and Counseling

Strengths/good practices

There is little need for academic guidance and there are arrangements for counselling.

Weaknesses

No system in place to identify weak students early, a prerequisite for guidance and counselling.

Based on the observations made during the visit by the review team, the eight aspects were judged as follows:

Aspect Reviewed	Judgment Given
Curriculum Design, Content and Review	Good
Teaching, Learning and Assessment Methods	Satisfactory
Quality of Students including Student Progress and Achievements	Satisfactory
Extent and Use of Student Feedback, Qualitative and Quantitative	Satisfactory
Postgraduate Studies	Good
Peer Observation	Unsatisfactory
Skills Development	Satisfactory
Academic Guidance and Counseling	Satisfactory

The overall judgment is suspended

6. RECOMMENDATIONS

Based on the findings at the review, we wish make the following recommendations for the consideration of DVPB and the Faculty of Veterinary Medicine:

1. Document the changes to the curriculum and develop clear ILO for the Department as well as for individual courses
2. Introduce new teaching techniques that are more student-centred
3. Develop a system to monitor the academic progress of students throughout the year
4. Develop more formal systems of obtaining student feedback on courses and teaching staff; introduce a staff/student liaison committee
5. Develop systems of peer observation and reporting for all academic aspects – lectures, practicals, tutorials and examination work
6. Increase post-graduate research in some disciplines in order to have a good balance between disciplines
7. Identify a role for CADAAR and use any extra capacity of this facility to improve the teaching and research in microbiology
8. Move the para-clinical subjects of direct importance for clinical work to the 3rd year from the current 2nd year
9. The facilities available and the good work carried out – for example by the rabies diagnosis centre - should receive more publicity than it currently does
10. Develop better (horizontal) links between the DVPB on the one hand and the clinical Departments on the other, in order to continually improve the relevance of the teaching in the DVPB.

7. ANNEXEX

Annex 1. AGENDA FOR THE REVIEW VISIT

Day 1 – (28th February 2008)

08.30am – 09.15am	Meeting of Review Panel with QAA Council Representatives and VC & Dean
09.15am – 09.45am	Discuss Agenda, Department Presentation on Self Evaluation report and Meeting with Staff members
09.45am – 10.00am	Observing Teaching – Lectures
10.15am – 10.30am	Observing Teaching – Lectures
10.30am – 11.30am	Meeting with academic staff
11.30am – 12.30am	meeting with Nonacademic staff
12.30pm – 01.30am	*Lunch*
01.30pm – 02.30pm	Observation Teaching – Practical
02.30pm – 03.30pm	Lab visit – Parasitology
04.30pm – 05.30pm	Meeting with students

Day 2 – (29th February 2008)

09.00am – 09.30am	Lab visit
09.30am – 10.00am	Computer Unit
10.00am – 11.00am	Meeting with Postgraduate students, Research Assistants, Research Collaborators
11.00am – 12.00noon	Meeting with undergraduate research students
12.00noon – 01.30pm	*Lunch*
01.30pm – 02.30pm	Interactive Learning Programme
02.30pm – 03.30pm	Farm visit

Day 3 – (17thMarch 2008)

09.00am – 10.00am	Laboratory visit (Pathology)
10.00am – 10.15am	Tea
10.15am – 11.15am	Laboratory Visit (Microbiology and CADDAR)
11.15am – 12.15pm	Meeting with Head and Staff for reporting
12.15pm – 01.15pm	*Lunch*
01.15pm -	Report writing