SUBJECT REVIEW REPORT

DEPARTMENT OF LIVESTOCK PRODUCTION

FACULTY OF AGRICULTURE
SABARAGAMUWA UNIVERSITY OF SRI LANKA

25th to 27th July 2007

Review Team :

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CONTENTS

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he quality of education within a specific subject or discipline. It is designed to evaluate the quality of both undergraduate and taught postgraduate programs, focusing on student learning experience and student achievement of intended learning outcomes. However, the responsibility for quality and standards lies within the institution itself, since it alone has the powers to control and to change existing practices.

This review on the study program in Livestock Production of the Sabaragamuwa University of Sri Lanka was conducted according to the guidelines given in the Quality Assurance Handbook for Sri Lankan universities, published by the Committee of Vice-Chancellors and Deans (CVCD) and University Grants Commission (UGC) in July 2002, based on the information contained in the Self Evaluation Report (SER) submitted by the Department of Livestock Production, and observations made by the review team during the site visit.

The SER submitted by the Department of Livestock Production consisted of eleven sections, namely: Introduction; Overall aims of the subject provision; Curriculum design, content and review; Teaching, learning and assessment methods; Quality of students including studentsô progress and achievements; Extent of student feedback, qualitative and quantitative; Postgraduate studies; Peer observation; Skills development; Academic guidance and counseling and Areas identified for improvement. There was no indication in the SER regarding the number of students, staff, and facilities available. The quality of education was reviewed with respect to the aims and learning outcomes given in the SER.

The review team visited the Department from 25th ï 27th July, 2007. The agenda of the three day visit is annexed (Annexure 1). During the site visit, below listed sources were used to collect additional information for the review.

- Meetings held with the Vice Chancellor, Dean, Head of the Department, academic staff & non academic staff members of the Department, Librarian and library staff, Officer-in-Charge of Computer center, Undergraduate students following the first, second and third years;
- Observation of the Department and other facilities of the Faculty (library, E-Learning center, computer center, lecture rooms, laboratories and farm);
- Observation of teaching sessions (lectures, laboratory practical & field practical);
- Other relevant documents made available at the Department (Annexure 2).

The review team focused on the following eight aspects of education at the subject level according to the guidelines given in the Quality Assurance Handbook:

1. Curriculum Design, Content and Review
2. Teaching Learning and Assessment methods
3. Quality of Students including Student Progress and Achievements
4. Extent and Use of Student Feedback (Qualitative and Quantitative)
5. Postgraduate Studies
6. Peer Observation
7. Skills Development
8. Academic Guidance and Counseling

Each one of the eight aspects was judged as óGoodô / óSatisfactoryô / óUnsatisfactoryô, noting the strengths, good practices and weaknesses in each. Considering the judgment of the eight aspects, an overall judgment was given as óConfidenceô / óLimited confidenceô / óNo confidenceô.

IVERSITY AND THE DEPARTMENT

of the Sabaragamuwa University of Sri Lanka was first established at Rahangala in 1995, when two affiliated university colleges located at Rahangala and Buttala were amalgamated to establish the Uva campus of Sabaragamuwa University, as per recommendations made by the Committee appointed for Restructuring of Affiliated University Colleges. In 2001, the Faculty of Agricultural sciences was shifted from Rahangala to Belihuloya to overcome the constraints that were specific to the location of the Faculty. As a result, at present, the Faculty of Agricultural Sciences is located at Belihuloya representing one of the five Faculties of the Sabaragamuwa University of Sri Lanka.

The mission of the Faculty of Agricultural Sciences is to search for and disseminate knowledge in the sphere of Agriculture. The Faculty aims to produce graduates in Agricultural Sciences, who are proficient in the science and practical skills in agriculture and contribute towards the manpower requirements of the nation. It strives to be the nucleus for the socio economic upliftment of the communities in geographic proximity. In this perspective, the Faculty of Agricultural Sciences offers a degree program in B.Sc. Agricultural Sciences and annually admits 75 students through UGC, based on their performance at the G.C.E. (advanced level) examination. At present, a total of 235 students are enrolled in four years of the study program to follow the B.Sc. degree in Agricultural Sciences. In addition, the Faculty has started an M.Phil. degree program in Agribusiness Management, and external Diploma programs in Agribusiness Management, Landscaping & Gardening and Eco Agriculture.

The Faculty is located in a picturesque setting in the southern foothills of the central mountain range on the A-4 highway, 160 km away from Colombo, 18 km from Balangoda, 60 km from Ratnapura, 31 km from Haputale and 50 km from Bandarawela. It shares common facilities (Central Library, Swimming pool and Sports facilities, Student Services, Hostels and Canteens) present at the main campus with the Faculties of Social Science & Languages, and Business Management & Geomatics. In addition, the Faculty has its own Library, a Computer unit, Departmental laboratories, a Language laboratory, an Audio Visual unit and a 38 acre teaching farm with crops and livestock to be used for the teaching / learning purposes. The Faculty complex has two large lecture theatres and two small lecture rooms. The small lecture rooms are comfortably furnished, well equipped and air conditioned. In addition, the Faculty has an Agribusiness Research and Development Center (ABRDC), which serve as a resource base for research, teaching assignments, development activities and consultancies in the sphere of Agribusiness Management.

The Faculty Library has a collection of over 6610 books, considerable number of journals and periodicals in lending and reference sections. It is fully automated and connected to the World Wide Web, facilitating on-line access to over 1000 journals. A sum of Rs. 2 Million is allocated annually by the University for Journal Subscription. The library provides photocopy service to students at a nominal rate. In addition, a section of the library has been upgraded and equipped to facilitate e-learning. The Faculty computer center has computers with internet facility. These computers are networked with the Central Computer Unit at the main campus enabling trouble shooting, maintenance and regular upgrading of software. The Faculty language laboratory is equipped with computers and other relevant equipment sufficient for teaching 20 students. The Audio Visual Unit is well equipped and provides services for the whole university. It is managed by a well qualified technical officer. The Faculty farm is still in the process of development, and carries limited numbers of livestock

nimal housing, and a number of plots of different crops, ents in crops and livestock farming. Four buses of the n field visits.

The Faculty publishes Journal of Agricultural Sciences annually, and holds a research symposium biannually to provide a forum to present the findings of Faculty research. For initiating research and staging research symposium, the Faculty receives Rs. 2 Million annually from the University budgetary allocation.

The Faculty of Agricultural Sciences consists of three Departments, namely; the Department of Agribusiness Management, the Department of Export Agriculture and the Department of Livestock Production. The staff comprises of 38 academic members, a considerable number of visiting academics from other universities, and 33 member strong non academic supporting staff (Annexure 3). There is only one Technical Officer to assist in laboratory practical conducted by all three departments, while there no lab attendants / assistants, at present.

The B.Sc. Agricultural Sciences degree program offered by the Faculty is of four year duration, and implemented over eight semesters. The curriculum is modular in nature comprising a compulsory core module and three optional advanced modules. The core module comprises of 40 courses, and is offered jointly by the three departments, English unit and Computer unit during the first four semesters (two years). From the fifth semester (third year) onwards, the students have the option of following one of the three advanced modules, during the last four semesters (two years). Courses on Farm practice, Computer science and English are common and mandatory for all students. These courses are offered from first semester to sixth semester. Each advanced module comprises of 18 courses including 12 subject specific courses, 6 common courses, 4 electives, and an Industrial training or a Special problems course.

The Faculty has received a Quality Enhancement Fund (QEF) for the period 2005-2009 through World Bank project on Improving Relevance and Quality of Undergraduate Education (IRQUE) to revise the curriculum and improve effectiveness of learning. With respect to improving quality of undergraduate education, the university has established an internal Quality Assurance Council, and the Faculty has made Peer review and teacher evaluation mandatory for all courses and teachers. In addition, it has started to revise the curriculum of B.Sc. Agriculture degree program under World Bank / IRQUE ï QEF project.

The Department of Livestock Production has played a significant role in maintaining academic excellence of the degree program since the inception of the Faculty, by offering a wide range of courses in livestock production, facilitating improvement of knowledge and skills in livestock production through both on campus and off campus academic activities. It is responsible for the administration, design and offering of courses in Livestock production. The Department aims to provide a high quality learning experience for student both on campus and at industrial training placements to produce high quality graduates who are capable of fulfilling the demands of the livestock sector in Sri Lanka.

The study program offered by the Department of Livestock Production consists of 7 compulsory courses and 2 parts of the common course on Farm Practice (AG 2103, AG 2204) in the core module, and 14 courses and two parts of the Farm practice course (AG 3105, AG 3206) in the Advanced module. Thus, the department contributes approximately

Farm practice component in the core module, and 100% ve Final Year courses in the advanced module.

To carryout academic activities, the Department has 11 member strong academic staff (2 Senior Lecturers, 7 Probationary lecturers, 2 demonstrators) and 2 members of supporting staff. It is in need of a laboratory technician. Lectures are conducted using common facilities, while the department has a reasonably well equipped laboratory and a Livestock field station to conduct field practical.

It was the objective of this review to evaluate the quality of the study program of the Department of Livestock Production with respect to the aims stipulated in the Self Evaluation Report and findings of the site visit.

3. AIMS AND LEARNING OUTCOMES

3.1. Aims

Page 1 of the Self Evaluation Report states that the aim of the Department of Livestock Production in offering a series of courses on various aspects of livestock production within the degree program in Agricultural Sciences is to produce graduates who would be able to

1. Demonstrate broad knowledge and skills in wide range of subjects related to livestock production.
2. Apply theoretical knowledge in practical situations of livestock production.
3. Apply scientific knowledge in livestock production to define, analyze and solve problems associated with livestock production.
4. Design and conduct scientific inquiries and experimentation in livestock production.
5. Apply the principles of sound practice in relation to health, safety and animal welfare.
6. Integrate theory and practice into current scientific issues and research.
7. Develop transferable skills in livestock production technologies and the ability to work with local enterprises.
8. Exchange, acquire and disseminate scientific and industry related information and be a partner in technology transfer.
9. Develop personal and professional skills.
10. Utilize supportive and stimulating learning environment which allow them to fulfill their academic and professional potentials.
11. Secure employment opportunities in the livestock sector worthy of the degree earned.

3.2. Learning Outcomes

The intended learning outcomes (ILOs) of different courses offered by the Department are given under the section on ócCurriculum Design, Content and Reviewô in pages 2-13 of the SER. Reproduced below are the ILOs of the courses offered by the Department of Livestock Production as stated in the SER.

Course Title: Anatomy and Physiology of Farm Animals (LP 1101)

3.2.1. Describe basic anatomy and physiology of five farm animals (Cattle, Goat, Swine, Poultry and Rabbit) to enable to identify abnormalities and manipulations of functions of these animals to maximize their productions.

3.2.2. Describe major body systems and their physiological functions.

ans belong to different body systems.
of functions of major systems such as digestive,

Course Title : Management of Non Ruminants (LP 1203)

3.2.5. Apply general management practices to be adopted in non-ruminant animal production in Sri Lanka
3.2.6. Identify different breeds of poultry, swine, and rabbits.
3.2.7. Describe feeding and management practices of above species in different age groups and physiological systems.
3.2.8. Describe incubation and hatchery management practices applying for poultry and miscellaneous poultry species.

Course Title: Food Science and Technology (LP 1204)

3.2.9. Describe the principles of food processing, preservation and product development.
3.2.10. Identify food constituents and their role in nutrition and describe different food processing technologies for products of animal and plant origin.
3.2.11. describe the process of food deterioration and techniques for food preservation.
3.2.12. Explain the food safety systems applied to food industry and demonstrate testing procedure to assess quality of the products of animal and plant origin.

Course Title: Management of Ruminants (LP 2107)

3.2.13. Apply general management practices to be adopted ruminant animal production.
3.2.14. Identify different breeds of cattle, buffaloes, sheep and goats.
3.2.15. Describe feeding and management practices of above species in different age groups and at different physiological status.
3.2.16. Explain the intended production and utility of ruminants and demonstrate different restraining methods for ruminants.

Course Title: Biochemistry and Animal Nutrition (LP 2108)

3.2.17. Describe the basic principles of biochemistry.
3.2.18. Explain the chemistry of basic nutrients, bio-molecules and their metabolism.
3.2.19. Demonstrate the basic chemical tests to detect the presence of proteins, lipids and sugars.
3.2.20. Explain the basic metabolism of nutrients in the animal body.

Course Title: Applied Animal Nutrition and Agrostology (LP 2205)

3.2.21. Explain basic nutrient requirements of selected farm animals and formulate feeds for specific needs and describe the procedure to establish a pasture land based on requirement.
3.2.22. Explain the basis of deriving feeding standards and calculate the nutrient requirements of selected animal species in different status and stages of growth and formulate suitable rations with available feed ingredients.
3.2.23. Design suitable practical feeding programs for selected animal species and explain the methods to assess the nutrient composition of a feed for a given livestock species.
3.2.24. Differentiate the fodder species for given climatic conditions and demonstrate the different methods of cultivation, management, defoliation and preservation of them and estimate the productivity of a given pasture land.

ne (LP 2206)

s, diagnosis and control measures of major diseases and

3.2.26. Identify common diseases affecting cattle, buffaloes, sheep, goats, pigs and poultry and their etiology, pathogenesis, clinical signs and diagnosis.
3.2.27. Demonstrate preventive and control measures for these diseases and describe control measures in outbreaks of highly contagious diseases in livestock farms.
3.2.28. Design a suitable vaccination program for a given disease in a given region.

Course Title: Sheep & Goat Production (LP 3109)

3.2.29. Describe the present situation of sheep and goat industries and distinguish suitable dairy sheep and goat breeds in different climatic and environment conditions.
3.2.30. Design an appropriate nutritional plan to obtain maximum production.
3.2.31. Demonstrate necessary steps in clean milk production and design the herd composition for a continuous production of meat and milk.

Course Title: Dairy Production (LP 3110)

3.2.32. Describe the present situation of dairy industry and distinguish suitable dairy breeds in different climatic and environment conditions.
3.2.33. Design an appropriate nutritional plan to obtain maximum production.
3.2.34. Demonstrate necessary steps in clean milk production and design the herd composition for a continuous production of milk.

Course Title: Poultry Production (LP 3111)

3.2.35. Judge the present status of poultry industry in Sri Lanka and identify and demonstrate the potentials of miscellaneous poultry species in Sri Lanka.
3.2.36. Develop a suitable program for the production of quality day old chicks with suggestive measures for improving the economy of poultry production.
3.2.37. Describe and distinguish egg processing techniques and demonstrate different practices in producing quality table eggs and poultry meat.

Course Title: Swine Production (LP 3112)

3.2.38. Evaluate the present status of swine industry in Sri Lanka and make suggestions for improvement.
3.2.39. Plan and demonstrate piggery for continuous production of pork in a most profitable way.
3.2.40. Identify necessary steps to be taken to minimize environmental pollution in pig farming.

Course Title: Aquaculture (LP 3113)

3.2.41. Evaluate the present status of aquaculture in Sri Lanka.
3.2.42. Differentiate and demonstrate the methods of breeding and management of aquatic species.
3.2.43. Demonstrate the proper maintenance of Aqua farm and demonstrate and describe the management of an aquatic environment in order to obtain high production and revenue.

Course Title: Integrated Farming (LP 3114)

3.2.44. Describe the value and importance of integrated farming
3.2.45. Critically evaluate an integrated system.

tegrated system for a given farming situation.

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3.2.47. Demonstrate the procedure of production of various dairy products.
3.2.48. Design a suitable quality control system for a production line of a given dairy product.
3.2.49. Describe the method of adulteration and detect the method and percentage of adulteration in a given milk sample / milk production sample.

Course Title: Meat Science & Technology (LP 3216)

3.2.50. Evaluate the present status of global and local meat industry and make suggestions to improve the industry in Sri Lanka and describe the anatomy and physiology of muscle tissue and evaluate the nutritive value of meat and fish and explain chemical and physical changes that take place in conversion of muscle to meat.
3.2.51. Demonstrate pre-slaughter handling, slaughtering techniques and post mortem inspection of animals and discuss and demonstrate the possible roots of microbial contamination of meat and fish.
3.2.52. Demonstrate the steps of preservation & processing of meat and fish product and design an abattoir and a meat / fish processing plant.

Course Title: Genetics and Animal Breeding (LP 3217)

3.2.53. Explain the principles and procedures to be followed in plant and Animal.
3.2.54. Describe basic concepts and branches of genetics and the chromosomal structure and their changes in cell division.
3.2.55. Explain the theories and principals of Mendelian population and quantitative genetics.
3.2.56. Discuss the principals of breeding and their importance in crop and Livestock production and demonstrate important steps to perform selected plant and animal breeding methods.
3.2.57. Explain different Selection & Breeding methods of farm animals.
3.2.58. Describe the chromosomal theory in evolution and its practical application in animal populations.
3.2.59. Analyze & suggest improvements of a breeding programme and propose a breeding Programme for the development of a new breed with given traits.

Course Title: Advanced Animal Nutrition (LP 3218)

3.2.60. Demonstrate the proximate analysis of a given feed sample and explain the methods of detection digestibility of different animal species.
3.2.61. Identify and explain different feed milling techniques available for animal feed processing and formulate a ration for a given animal species using available/given ingredients.
3.2.62. Describe the role of food additives, unidentified growth factors and nutritive factors in Nutrition.

Course Title: Marine & Inland Fisheries (LP 3220)

3.2.63. Identify fishery potential, constrains & remedies of the fish industry.
3.2.64. Explain national and international legislation concern to fisheries.
3.2.65. Describe and evaluate the application of suitable fishing gear, management of fisheries and stock assessment for different fishing systems.

3223)

parameters in food ecology.

detecting the total microbial count & pathogenic organisms in a given food sample.

3.2.68. Recommend preventive measures for food borne infections and intoxication.

Course Title: Food and Nutrition (LP 4221)

3.2.69. Identify the nutritional status, health and nutritional problems in Sri Lanka and identify the possible nutritional interventions in Sri Lanka nutritional related disorders.

3.2.70. Explain nutritional disorders and suggest possible remedies in human.

3.2.71. Evaluate and make suggestions to improve the efficiency of an available or proposed nutritional programme.

Course Title: Biodiversity (LP 4224)

3.2.72. This course focuses on the very basic concepts of biodiversity with specific to livestock production in Sri Lanka and global, the values and conservation of biodiversity in global context.

Course Title: Ornamental Fish Culture (LP 4227)

3.2.73. Selection suitable fish and plant species for different aquatic environmental conservation and demonstrate different breeding methods for different aquatic species.

3.2.74. Formulate a suitable live feed for different stages using available ingredients.

3.2.75. Explain and demonstrate the management practice in parent stock, breeder stock and Grow out stages to fulfill the demand of export market in a profitable manner.

Course Title: Farm Practical (AG2103, AG2204, AG3105, AG3206)

3.2.76. Demonstrate restraining feeding housing and reproductive mgt. Of neat cattle buffalo goat and sheep.

3.2.77. Demonstrate diagnostic procedure and preventive measures for common diseases in livestock species.

3.2.78. Demonstrate efficient methods of water management.

3.2.79. Identify potential sources and materials to integrate crops and livestock.

Course Title: Industrial training

3.2.80. Display the attributes, skills, behaviors and attitude required at the work place.

3.2.81. Demonstrate the ability to establish effective working relationship with others, defining, sharing, and delegation responsibilities.

3.2.82. Select and apply appropriate scientific and business principles and techniques to diagnose problems/issues.

3.2.83. Demonstrate integrated and holistic analysis of the issues of concern and propose alternatives.

3.2.84. Collect, organize and critically evaluate information from range of source-communicate findings and conclusions/recommendations appropriately, effectively.

3.2.85. Display skills of professional scholarship required for personal and career management.

TEAM

nd Review

The degree program is of four year duration and implemented over eight semesters; viz., each academic year consisting of two 15-week semesters. Medium of instruction is English. The curriculum is modular in nature comprising a compulsory core module and three optional advanced modules. The Core module comprises of 24 different subject based courses, 4 parts of Farm practice course, 4 parts of English course and 4 parts of Computer Science course. It is offered jointly by the three departments of study, the English Unit and the Computer Unit during the first four semesters. Core module is common and compulsory for all students. Each student can select one of the three advanced modules to be followed during the last four semesters, based on their preference and performance (merit). To fulfill the requirements of an advanced module a student should follow 12 courses in the selected field of specialization, 2 parts each of common and mandatory Farm practice, Computer Science and English courses, 4 elective courses, and an Industrial training or a Special problems course.

The Department of Livestock Production offers 7 subject based courses and 2 parts of Farm Practice course (AG 2103, AG 2204) contributing 30% of the subject based component and 50% of the Farm Practice component in the core module. In the Advanced module in Livestock production, the Department offers 12 specialization courses and 2 parts of Farm practice course (AG 3105, AG 3206) during the Third year and 8 elective courses and Industrial training during the Final year. For each subject-based course, a total of 4 hours per week (2 hours for lectures and 2 hours for practical) are allocated for teaching / learning. While the Faculty Handbook has no indication regarding the credit value of individual courses or the minimum credit requirement for the award of the degree, in the SER each course has been assigned 3 credit units. The Department is reviewing the curriculum of its study program at present.

The strengths and weaknesses of the study program offered by the Department of Livestock production at present are highlighted and suggestions to improve the quality of the courses are made in the subsequent sections of this chapter, with the expectation that these suggestions will be given due consideration during the on-going curriculum revision process.

- This arrangement of having a compulsory core module and optional advanced modules is advantageous because it provides opportunity for the undergraduates to learn basic aspects of agriculture during the core module and acquire in-depth knowledge and skills in a selected area during the advanced (specialization) module.
- Steps taken by the faculty to provide satisfactory level of computer literacy and communication skills in English language to enhance the employability of the graduates, by way of using English as the medium of instruction, and making English language and Computer Science as common and compulsory courses during the first six semesters are commendable.
- Industrial training stands out as a well thought about and meticulously organized component of the curriculum that can be taken as an example by other universities. It warrants special commendation with respect to its structured organization and implementation strategies to achieve the ILOs.
- In general, the curriculum is of broad nature addressing relevant aspects of livestock production, and the courses offered by the Department are at a satisfactory academic level in terms of the content, breadth and depth. The proportional contribution of the Department to the academic program is sufficient and satisfactory.

be improved considerably though inclusion of more sing the depth / breadth. For example, LP 3113 can be LOs to incorporate identification of suitable species for aquaculture in Sri Lanka, assessment of suitable methods for culture, evaluation of processes contributing successful centre operation and aspects of environmental impact. It will be beneficial to redesign the course embracing Principles of Aquaculture, Ichthyology, Fish genetics and breeding, Water and soil quality in aquaculture, Aquaculture nutrition, Knowledge of aquatic plants and algae culture, Live food production in aquaculture, Environmental Assessment and Management, Recreational fisheries in inland water ecotourism, Aquaculture engineering, and Culture based capture fishery. Furthermore it is suggested to include Field visits to Udawalawa Regional Research Centre, Dambulla Fisheries Centre (NAQDA), Rambodagalla Ornamental Fish and Aquatic Plant Culture Centre (NAQDA), and to landing sites of Tangalle, Beruwala, Negombo and Chilaw.

- In some courses the Title does not match with the specified ILOs and / or content (e.g., LP 3217 - ILOs include both animal and plant aspects although the Title is Genetics and Animal breeding. Furthermore this course does not address practical animal breeding aspects; LP 3218 course does not address any advanced aspects of Animal Nutrition according to the ILOs and Course capsule).
- Some courses need to be rearranged to improve the Course sequence to proceed from principles to applications (Ex. LP 2205 and LP 3218); while in some other courses (e.g., LP 4224) ILOs should be rewritten.
- Courses addressing certain basic principles are included in the advanced module instead of the Core module (e.g. Principles of Genetics and Breeding). The existing course should be revised to address principles and included in the core module, while another course should be developed to address advanced aspects of animal breeding to be included in the advanced module.
- Certain amount of repetition of course material was noted between some courses (e.g., LP 3109 & LP 3110). In order to minimize such repetitions it is suggested to develop a new course embracing all Principles of Animal Production for the core module, and modify advanced courses to address the in-depth aspects.
- It was noted that even the students specializing in Livestock production opt for specialization courses offered by other departments such as Agribusiness, without following the 8 electives offered by the Department of Livestock production. Hence, the department should improve the relevance and quality of the elective courses offered during the fourth year to attract students.
- Although every course has been assigned a credit value of 3, some courses seem to involve greater work load than others. The Department need to pay due attention to the actual workload (lectures, practical and independent learning involved) when assigning credit value for the courses. This will facilitate utilization of available time more efficiently, and strengthen some courses / introduce new courses/ save time.
- Some courses are too bulky (e.g., LP 1208) and address some fundamental aspects in greater detail than needed. Some other courses (LP 1101) include additional aspects than those relevant (Neuro-endocrine system, Digestive system, reproductive system and mammary system) for agriculture undergraduates. Attention should be paid during revision to exclude such less relevant aspects and improve the curriculum.

In relation to the Curriculum Design, Content and Review, the judgment of the team is 'Satisfactory'.

ment Methods

iety of teaching/learning methods such as lectures, demonstrations, practical training, case studies, individual and group presentations, assignments, term papers, reports, tutorials, field studies, and Industrial training at present. The most common methods are lectures and practical training. Lectures are prepared in a structured format and delivered using teaching aids such as multimedia, OHP, white board and supplemented with handouts / lecture notes distributed among students. The small lecture rooms (18-20 student capacity) are well-equipped with modern teaching and learning facilities such as multimedia and are comfortably furnished. The large lecture theatre (>100 student capacity) is equipped with conventional teaching aids, moderately furnished and spacious. Comparatively, the small lecture rooms create a very conducive environment for interactive learning.

In addition to the conventional teaching / learning approaches, the Faculty uses modern approaches such as Industrial training and E-learning. Special mentioning is warranted with respect to Industrial training, a meticulously organized program to provide a real life work world exposure and experience to students. Coordinator (staff member) in charge of the program is responsible for seeking and securing of industrial placements, appointment of internal (Departmental) and External (Industry) supervisors for each student, conducting an orientation program for students, implementation and coordination of the training program. The students are given instructions regarding the ILOs, their responsibilities, nature and expectations of the industry at the pre-placement orientation program. Every student should submit a Work plan to the internal supervisor in consultation with the external supervisor within 2 weeks of placement. Each student should maintain a Diary (Format given by the Department ï Annexure 4). Progress of the student is monitored by both the internal and external supervisors. Students are evaluated based on the draft report submitted, presentation made and diary maintained by the students and on external supervisorôs report. A brochure on Industrial training (Annexure 5), a Guidance Booklet on Report writing and Presentation, Reports submitted and Diaries maintained by students were made available to the Reviewers. The guidelines were clear, and the reports and diaries maintained were impressive. The reviewers recommend continuation and further strengthening the industrial training component.

For e-learning the Faculty has allocated a section of the library, equipped it with computers linked with the World wide web, subscribed to over 100 electronic journals and appointed a person-in-charge. The review team noted with satisfaction that this e-learning facility is efficiently utilized by the students for completing assignments. In addition, the Faculty library has a collection of over 2800 books and journals in livestock production (Annexure 6). Furthermore, each staff member is provided with a personal computer with fast internet facility managed by the computer unit. It appears that the Faculty has wisely and effectively utilized IRQUE funds to improve the learning environment. However, time slots have not been allocated in the regular timetable for independent learning activities / library use / E-learning. Allocation of time slots for independent learning activities should be considered with revision of the curriculum.

As indicated by the students, staff members, and as judged by the review team, teaching and learning takes place in an interactive environment. The teachers are successful in attracting the attention of all the students in the class and effective in teaching. The Faculty has made it mandatory for all probationary members of academic staff to successfully complete a course on Teaching Methodology for confirmation in the post. This regulation seems to have

ormance by all lecturers. The lectures are conducted
rmat. For each course lecture notes have been prepared
l sets of handouts are distributed among the students.

Laboratory practical are conducted in the adequately equipped Departmental laboratory, while the available Farm facilities are used to provide Field practical training. The Farm has a land extent of 38 acres and is located 2 km away from the main university complex. Although the farm is in initial stages of development it has established a good meat processing unit, spacious animal housing complexes, and minimum required stocks of livestock and poultry (Annexure 7) for practical training in dairy cattle management, Swine management and Poultry management. Facilities for aquaculture practical are lacking, while provision of irrigation facility to the farm is difficult. During the discussion session, the undergraduate students also expressed their concern regarding the lack of facilities for aquaculture practical in the farm. Field trips to Aquaculture stations are arranged by the staff members to compensate for this inadequacy at present.

The members of the academic staff are young, enthusiastic and committed. They have improvised a number of utensils from locally available materials for the use of practical. They check all utensils, equipment and the procedure well in advance of the practical, to ensure that every thing is in order and the practical can be conducted smoothly. For each laboratory practical and field practical, handouts containing clearly stated guidelines / instructions are given to students in advance, and a demonstration and explanation is made on-site by the instructors to guide the students through the procedure. Due to small number in a batch, every student gets the opportunity to participate in the practical as a member of a small group. To reduce the workload of the academic staff, it is advisable to appoint a laboratory technician / assistant to the department to assist in preparation of practical and maintenance of equipment.

The Department practices both summative and formative assessment methods. Both the end semester examinations and continuous course evaluation system are in place. Depending on the nature of the subject diverse approaches including written (Quizzes, MCQs, structured essays, essays, assignments, reports) oral (Presentations, viva voce), and practical (spots, assignments) tests are used to assess the performance of students. Examination structure and allocation of marks as indicated in the Faculty Handbook is attached (Annexure 8).

In general, the question papers for each course are of comprehensive nature adequately covering the material included in the course outline. All question papers are scrutinized and moderated, while answer scripts are double marked with an internal / external expert.

Farm Practice course is a non-credit compulsory component of the curriculum that is offered in 6 parts from first through sixth semester. The Department of Livestock Production is responsible for offering four parts of the Farm practice course. The department adopts both summative and formative methods of assessments assigning in-course assignments (40%), end semester practical (40%) and oral examination (20%) to evaluate students in this multi-part course. The farm practice course, as judged by the panel of reviewers, is one of the components in the curriculum that helps students to reinforce the subject-specific knowledge and acquire transferable skills. This course should be continued and further strengthened.

e following, based on the observations:

ıve a trained laboratory technician for preparation of practical and maintenance of equipments, and the academic members carry out these additional tasks with the assistance of a store keeper who has no formal training. Hence, recruitment of a laboratory technical officer to the department is required.

- Farm development should be given high priority and it should be planned properly obtaining necessary input from experts. In addition to exploring the ground water resources, practical rainwater harvesting devices also should be established. Feasibility of establishing a small aquaculture unit should be explored.
- The devotion and enthusiasm of the dynamic team of young academic members is extremely impressive, but they lack experience. Hence, it would be beneficial if a senior academic member (Professor) with extensive experience in diverse academic, research and service areas of livestock production is recruited to guide and assist these young members in their endeavor to improve the relevance and quality of the curriculum, teaching learning approaches and local and international linkages.

In relation to the Teaching, Learning and Assessment methods the judgment of the team is 'Good'.

4.3. Quality of Students including Student Progress and Achievements

The Faculty and the Department admits students allocated by the UGC, and have no authority in selecting them. The quality of students admitted to follow the degree depends on UGC policy. Although the Faculty is entitled to admit 75 new entrants annually, this eligible quota has never been realized. At present, there are only 235 registered students in four batches (first to final year batches) instead of eligible 300, indicating an enrollment rate of 78% (Annexure 9). Authorities should investigate the reasons for low enrollment rate and take necessary remedial measures as soon as possible.

The students are allocated to the Department for specialization in the 3rd year based on the preference and performance. The department can absorb only 18 students per year for the specialization course according to the available facilities. An inspection of the number of registered students for specialization in Livestock Production indicated that the number increases annually (18 Third year students vs. 16 Final year students; 12 graduates in 2006 vs. 6 graduates in 2005). Furthermore, it was noted that the students selected for specializing in Livestock Production have higher mean GPA compared to the batch average(3.108 Vs 2.79), indicating the existence of an increasing demand among better performing students for specialization in Livestock Production. Furthermore, the students specializing in Livestock production appear to improve their GPA during specialization (Annexure 10) and about 60% secure second class upper division degrees (SER page 21), suggesting the effectiveness of various measures (monitoring performance through continuous assessments, advising and counseling of weaker students) taken by the Department to ensure studentsô progress to achieve expected learning outcomes. This could be another reason for the near zero drop out rate (~100% progression rate and 100% completion rate) of the students enrolled for specialization in Livestock production.

The review team had the opportunity to discuss with students, and to observe student participation in lectures, practical and seminar presentation. Based on these experiences, the review team concludes that the undergraduate students in Agricultural Sciences at

al and those specializing in Livestock Production in
ulture undergraduates and those specializing in Animal
s of their generic skills, subject knowledge and skills.

Information provided by the Department revealed that the average length taken to complete the degree program by undergraduates in Agriculture is 4 years and 5 months. Authorities should take every step necessary to ensure completion of the degree program within 4 years.

Graduates are employed in the private, semi government, government sectors while some are self employed. Only two out of the 12 graduates are yet to secure employment (Annexure 11). Over 67% of the graduates are employed in the private sector. The mean time taken by the students specializing in Livestock Production to secure the first job after graduation is 2.7 months (Annexure 12). Considering the multitude of external factors that affect employment prospects of fresh graduates, this can be considered satisfactory. The staff members are of the opinion that industrial training serves as a stepping stone for the first job. It was not possible to obtain views of the final year students regarding this because they were out on Industrial Training. One final year student who came to the department for some other purpose during the site visit period confirmed this opinion.

Information provided in the Faculty Handbook (Annexure 13) indicates that the criteria used for the award of classes are in agreement with the standards adopted by other Faculties of Agriculture, and that the job opportunities secured by the graduates Specialized in Livestock Production are comparable to those secured by the graduates in similar disciplines.

In relation to the Quality of Students, Student Progress and Achievements the judgment of the team is 'Good'.

4.4. Extent and Use of Student Feedback, Qualitative and Quantitative

At present there is no formal mechanism in place to obtain student feedback, and it is not compulsory to obtain student feedback. However, almost all the members of the academic staff conduct Teacher / course evaluation voluntarily by themselves at the end of each semester. They believe that the university will introduce formal teacher / course evaluation in near future. A checking of the student feedback forms revealed that the students are generally satisfied with most of the courses and teachers. While applauding the members for their initiation and voluntary efforts to obtain student feedback despite the absence of a formal mechanism, the review team was compelled to make a positive judgment on the department.

- At the same time, the review team strongly recommends the authorities to initiate and establish a formal mechanism to obtain student feed back on courses and teachers both at mid semester and end semester, so that the information obtained could be used to improve teaching / learning process.

In relation to the Extent and Use of Student Feedback, the judgment of the team is 'Satisfactory'.

4.5. Post Graduate Studies

At present, the Department of Livestock Production does not conduct any postgraduate degree program. Two members of the academic staff have completed Ph.D. recently, while one more member is still reading for Ph.D. in a foreign university. Two other members are

hile 3 more members are pursuing M.Phil. degrees in
iates serve as demonstrators.

All staff members are engaged in research activities either as main investigators or co-investigators. The university provides Rs. 2,000,000/= annually for staff research and to stage biannual research conference. Whenever feasible, the staff members get the undergraduate students following the advanced module (3rd years and Final years) in livestock production involved in suitable components of their post graduate research programs. All staff members with postgraduate qualifications especially those with Ph.D. qualifications have impressive lists of research publications indicating their active involvement in postgraduate research.

Despite these positive aspects observed, no member of the Department serves in supervisory capacity to postgraduate students yet. None of the members take part in teaching postgraduate courses either. The review team views these aspects in relation to postgraduate studies as a weakness, but hopes the members of the Department will take necessary steps to remedy this situation in future.

In relation to the Postgraduate Studies, the judgment of the team is 'Unsatisfactory'.

4.6. Peer Observation

The department has not established a formal mechanism for peer observation yet. However, the members of the department have recently adopted a peer evaluation form (Annexure 14) and have commenced peer evaluation of teaching informally. This is commendable. Each staff member has received favorable comments from the peers, and they perceive peer evaluation as being helpful for improving their teaching quality. However, there was no evidence for such outcomes.

The review team was pleased to note the enthusiasm shown by the academic members to start peer observation and evaluation informally even in the absence of formal evaluation system in place. In addition to peer evaluation, the department has adopted good practices such as scrutiny and moderation of all question papers, and double marking of answer scripts with the assistance of internal / external experts. While such good practices should be continued, the review team wishes to recommend establishment of a formal peer evaluation system by the Faculty.

In relation to the Peer Observation, the judgment of the team is 'Satisfactory'.

4.7. Skills Development

Skills development should be an integral component of any curriculum. In this regard, the Department of livestock production has paid adequate attention when designing its curriculum. Almost every course offered by the department has either a laboratory practical component or field practical component to provide subject specific skills. In addition, the farm practice course offered by the department is totally practical based and facilitate development and strengthening the subject specific skills and team working skills. To promote generic skills including as communication skills, language skills, and computer literacy, the study program uses English as the medium of instruction, while the curriculum has compulsory courses on English language and Computer Science offered from first to sixth semester. In addition, diverse assessment methods such as presentations, reports and

omote communication skills. To further strengthen the repare the students for the job market an exposure and n through a compulsory Industrial training program.

In relation to the Skills Development, the judgment of the team is 'Good'.

4.8. Academic Guidance and Counseling

Student counselors are appointed from every faculty by the University authorities. At present two academic members of the Department serve as Student counselors of the faculty, while another member serve as an academic warden. The student counselors organize the orientation program for the new entrants. The Faculty appoints academic members as academic mentors for every student from the first year to provide academic guidance during the study program. However, no mechanism has been initiated to encourage the students to meet their academic mentors. Appointment of academic mentors has been abandoned in 2006 because the students do not meet the mentors for advice as expected. Thus academic mentors have not been appointed for the 2005/06 batch of new entrants. The students expressed their concern regarding this. The review team suggests restarting the good practice of appointing academic mentors, establishing a mechanism to encourage the students to meet their academic mentors and taking necessary measures to improve its effectiveness.

During the third year of the academic program, the Department appoints its academic members as internal supervisors of the industrial training program of each specialization student since the students need further guidance during industrial training. Usually the relationship between the internal supervisor and the student is much stronger than those between academic mentors and students.

Although these measures are in place, there had been no checking of the effectiveness of any of the programs. Furthermore, none of the staff members had received any training in academic counseling. There was no documentary evidence regarding the services rendered by student counselors / academic mentors to assist the students. Neither was there any documentary evidence with respect to student progress or achievement due to academic counseling. The review team suggests allocating a designated place for student counseling, providing formal training on academic counseling to student counselors, restarting appointment of academic mentors, initiating a mechanism to encourage meeting of academic mentors by students and maintaining proceedings of meetings.

In relation to academic guidance and counseling the judgment of the team is 'Satisfactory'.

5. CONCLUSIONS

The degree program is of four year duration and implemented over eight semesters. Medium of instruction is English. The curriculum is modular in nature comprising a compulsory core module and three optional advanced modules. This arrangement of having a compulsory core module and optional advanced modules is advantageous because it provides opportunity for the undergraduates to learn basic aspects of agriculture during the core module and acquire in-depth knowledge and skills in a selected area during the advanced (specialization) module.

ction offers 7 subject-based courses and 2 parts of the % of the subject based component and 50% of the Farm ule. In the Advanced module in Livestock production, the Department offers 12 specialization courses and 2 parts of Farm practice course (AG during the Third year and 8 elective courses and Industrial training during the Final year. The Department is reviewing the curriculum of its study program at present.

The curriculum is of broad nature, and the courses offered by the Department of Livestock are at a satisfactory academic level in terms of the content, breadth and depth. The proportional contribution of the Department to the academic program is sufficient and satisfactory. Having English language and Computer Science as common and compulsory courses during the first six semesters facilitates enhancement of generic skills of students. Industrial training is a well thought about and meticulously organized component of the curriculum that provides real work world exposure and experience to the students.

Certain amounts of repetitions, presence of less relevant content, insufficient depth / breadth were noted in several courses. Some courses have been placed inappropriately, while some others should be modified. In some courses, the assigned credit value was not appropriate. These modifications should be made during the on-going curriculum revision.

Members of the Department adopt diverse traditional as well as modern teaching/learning approaches. The lecture rooms are well-equipped with teaching and learning facilities are adequately furnished to create a conducive environment for interactive learning. Section of the faculty library has been modified for e-learning. The department has an adequately equipped laboratory and a livestock farm with minimum stock to conduct practical. The departmental staff is highly committed to teaching.

The Department practices both summative and formative assessment methods. Diverse approaches are used to assess the performance of students. The question papers are of comprehensive nature. All question papers are scrutinized and moderated, while answer scripts are double marked with an internal / external expert.

The Faculty admits students allocated by the UGC, and has no authority in selecting them. The quality of students admitted to follow the degree depends on UGC policy. The present enrollment rate is about 78%.

The students specializing in Livestock Production have higher mean GPA compared to the batch average, and improve their GPA during specialization. The drop out rate is near zero and progression rate and completion rate are nearly 100% for the students enrolled for specialization in Livestock production.

The undergraduate students in Agricultural Sciences specializing in Livestock Production are in par with the Agriculture undergraduates specializing in Animal Sciences in other universities in terms of their generic skills, subject specific knowledge and skills.

Average length taken to complete the degree program is 4 years and 5 months. Graduates are employed mostly in the private sector. Mean time taken by the students specializing in Livestock Production to secure the first job after graduation is 2.7 months.

s are in agreement with the standards adopted by other
opportunities secured by the graduates Specialized in
to those secured by the graduates in similar disciplines.

At present, there is no formal mechanism in place to obtain student feedback. But the members of the academic staff conduct Teacher / course evaluation voluntarily.

At present, the Department of Livestock Production does not conduct any postgraduate degree program, while the department has not established a formal mechanism for peer observation yet. However, the members of the department have commenced peer evaluation of teaching informally. The department has adopted good practices such as scrutiny and moderation of all question papers, and double marking of answer scripts with the assistance of internal / external experts.

Department of livestock production has paid adequate attention to skills development when designing its curriculum. Almost every course offered by the department has either a laboratory practical component or field practical component to provide subject specific skills. The farm practice course is totally practical based. To promote generic skills the study program uses English as the medium of instruction, while the curriculum has compulsory courses on English language and Computer Science offered from first to sixth semester. Diverse assessment methods such as presentations, reports and viva voce examinations used to promote communication skills. Compulsory Industrial training further strengthens the acquired skills and attitudes and to prepare the students for the job market through an exposure and experience in real work world.

Two members of the Department are Student counselors, while another member is an academic warden. Academic members are appointed as academic mentors. But, no mechanism is in place to encourage the students to meet their academic mentors. There had been no checking of the effectiveness of any of the programs. None of the staff members had received any training in academic counseling. There was no documentary evidence regarding the services rendered by student counselors / academic mentors to assist the students. Neither was there any documentary evidence with respect to student progress or achievement due to academic counseling.

Based on the information provided in the SER and observations made during the study visit by the review team, the eight aspects were judged as follows:

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

eight aspects and the reasons for arriving at the said 4.1 to 4.8. Recommended measures to improve the n 7.

6. RECOMMENDATIONS

In the context of all above, to improve the academic program offered by the Department of Livestock Production, the review team recommends the following, for which the reasons are given in the sections 4.1. ï 4.8.

- Improve LP 3113 and other relevant courses by expanding ILOs, organizing the content and including field trips as stipulated in section 4.1. In LP 3217, modify the ILOs / Title to match with each other. Include aspects of animal breeding into this course. LP 3217 is more suitable to be a core course. Develop another course on advanced aspects of animal breeding to be included in the advanced module.
- Revise LP 3218 and assign an appropriate title. Rearrange courses such as LP 2205 and LP 3215 to improve the course sequence to proceed from principles to applications.
- Minimize repetition of course material between courses (e.g., LP 3109 & LP 3110). Develop a course embracing all Principles of Animal Production for the core module, and modify the advanced courses to address in-depth aspects.
- Improve the relevance and quality of the elective courses offered during the fourth year to attract students.
- Assign realistic credit value to courses by considering the actual workload (lectures, practical and independent learning involved).
- Exclude less relevant aspects from courses (e.g., LP 1101, 1208) and reduce the bulk.
- Continue and further improve industrial training, farm practice, English and computer courses.
- Allocate time slots for independent learning activities.
- Recruit a laboratory technical officer to the department.
- Prioritize farm development activities. Plan the farm properly obtaining necessary input from experts. Explore the ground water resources, and establish practical rainwater harvesting devices. Explore the feasibility of establishing a small aquaculture unit.
- Investigate the reasons for low enrollment rate and take necessary remedial measures as soon as possible.
- Take every necessary step to ensure completion of the degree program within 4 years.
- Initiate and establish a formal mechanism to obtain student feed back on courses and teachers.
- Take steps to initiate a postgraduate program.
- Establish a formal peer evaluation system.
- Establishing a mechanism to encourage the students to meet their academic mentors and taking necessary measures to improve its effectiveness. The review team suggests allocating a designated place for student counseling, providing formal training on academic counseling to student counselors, restarting appointment of academic mentors, initiating a mechanism to encourage meeting of academic mentors by students and maintaining proceedings of meetings.