

SUBJECT REVIEW REPORT

DEPARTMENT OF ZOOLOGY



**FACULTY OF SCIENCE
UNIVERSITY OF RUHUNA**

16th to 18th May 2007

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1. SUBJECT REVIEW PROCESS

The purpose of the subject review process is to evaluate the quality of the student learning experience and education at the subject level, as well as the entire programs offered by an academic department. It is aimed at examining and reviewing the appropriateness of academic standards set for the programs and the effectiveness of curriculum in delivering the intended learning outcomes described in the Self Evaluation Report (SER) submitted by the department. It is also aimed at examining the suitability and effectiveness of the assessment methods used to measure the achievement by learning outcomes relevant to the program, which are identified by the department. It is in this context, that the Review Team evaluated the quality of both undergraduate and postgraduate programs offered by the Department of Zoology of the Faculty of Science of University of Ruhuna, Sri Lanka.

The Review Team consisted of Professor (Ms.) Asoka Pathiratne (Professor, Department of Zoology, University of Kelaniya), Dr. (Ms.) Nirmalie Pallewatta (Senior Lecturer, Department of Zoology, University of Colombo) and Dr. M. Printhan (Senior Lecturer, Department of Botany, Eastern University of Sri Lanka). The Review Team perused the SER prepared by the Department of Zoology before the scheduled review visit.

The Review Team visited the Department of Zoology of University of Ruhuna, during the period commencing from 16th to 18th May 2007, and initiated the peer review process (Annex 1 gives the agenda of the visit). There were good evidences to see that the department has made all arrangements and provisions for the subject review in an efficient manner. The Review Team followed the guidelines set by the Quality Assurance and Accreditation Council of the University Grants Commission for subject evaluation. The following eight aspects of education/provision were considered under the review process:

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
5. Postgraduate Studies
6. Peer Observation
7. Skills Development
8. Academic Guidance and Counseling,

The Review Team had discussions with Vice-Chancellor of University of Ruhuna, Dean of the Faculty of Science, Head of the department, members of the academic staff as well as non-academic staff, undergraduate students and a postgraduate student. Peer observation of the teaching and learning process in one practical class and four lectures was also carried out during the review process. The Review Team also had an opportunity to observe seminar presentations of the students following B. Sc. (special) degree programme in Zoology.

The Review Team inspected the facilities provided by the Department of Zoology to the students (Teaching Laboratories, Research Laboratories, Animal house, lecture theater), and other general facilities available for all students (Main library, Faculty Library, Computer center). The Review Team also observed relevant documents including Students Handbook-2006 of the Faculty, Lecture material, samples of students' practical reports, marking schemes and question papers of several course

modules, undergraduate dissertations, postgraduate theses, questionnaires used for obtaining students' feedback, records of departmental meetings and research publications of some of the academic staff (Annex 2 gives a list of documents observed). In between these activities, the Review Team constantly met together and discussed the outcomes of these observations and meetings. All reviewers collectively contributed to the writing of the report and making judgments in the eight aspects.

2. BRIEF HISTORY OF THE UNIVERSITY, FACULTY AND THE DEPARTMENT

The University of Ruhuna was established by a Special Presidential Decree in 1978, as Ruhuna University College. Initially it constituted with four Faculties, namely Agriculture, Arts, Medicine and Science. The Faculties of Science and Agriculture which were initially affiliated to University of Kelaniya and Peradeniya respectively were located in the premises of Technical College at Meddawatte, Matara. The Faculties of Arts and Medicine were affiliated to the University of Colombo. The Faculty of Arts was located in the premises of teachers' Training College at Eliyakanda, Matara, This affiliation to the other Universities was continued until Ruhuna University College was upgraded to a fully-fledged University on 1st February 1984. After the construction of the new building complexes, Faculties of Science and Humanities & Social Sciences were relocated in the main campus premises at Wellamadama, Matara and Faculties of Agriculture and Medicine were relocated in Kamburupitiya (Matara) and Karapitiya (Galle) respectively.

The University presently comprises seven faculties with the recent establishment of three more faculties namely Faculty of Engineering, Faculty of Management and Finance, and the Faculty of Fisheries and Marine Sciences & Technology. A total of 272 students were enrolled for the bachelors' degree programmes during the first academic year (1978/79) and at the commencement of the 2006/2007 academic year it has increased to 6752.

The Faculty of Science presently consists of the Departments of Botany, Chemistry, Computer Sciences, Mathematics, Physics, and Zoology. In addition, there is a Computer unit which caters to the needs of the faculty, and the University. The Faculty Board of Science regulates all the academic activities in the Faculty, under the direction of the Senate. The Faculty of Science offers mainly undergraduate courses viz. the B.Sc. General degree of three years duration and B. Sc. Special degree of four years duration. The faculty also offers postgraduate degree programmes leading to the M.Sc., M.Phil and Ph.D. At present, the faculty recruits 130 students for the biological science and 210 students for the physical science streams for every academic year. The student population in the Faculty of Science in the 2006/2007 academic year is 554 for the biological sciences stream and 831 the physical science stream (Students Handbook 2006). Undergraduate students to the faculty are selected by the University Grants commission of Sri Lanka, based on the performance of students in the relevant G.C.E (A/L) examination.

The Department of Zoology is one of the founder departments and has been in existence from the inception of the University in 1978. After an initial period of affiliation to the University of Kelaniya, it developed into an independent institution in 1984. Having contributed only to a B.Sc. General Degree in Science initially, a Special degree program in Zoology commenced in 1982 in collaboration with the

University of Kelaniya. The Fisheries Biology unit, which emerged as a sub department in the Department of Zoology, was promoted to Department of Fisheries Biology in 1988 and was housed in the Faculty complex. Department of Fisheries Biology has recently elevated to a Faculty status: the Faculty of Fisheries and Marine Sciences & Technology. This Faculty has a separate window for the enrolment of undergraduate students.

In accordance with the other departments in the Faculty of Science, the Department of Zoology offers course units covering basic and applied fields of Zoology for undergraduate students registered for B.Sc. General Degree and B.Sc. Special Degree programmes. In addition, academic staff members are involved in teaching of two M.Sc. Programmes offered by the Faculty of Science viz. M.Sc. in Crop Protection and M.Sc. in Molecular Biology. All undergraduate programmes follow a course unit system of evaluation and the workload is specified.

According to the Self Evaluation Report (SER) provided by the department, the total number of students registered for the B.Sc. General Degree programme in 2006/2007 academic year for Level I, Level II and level III is 100, 90 and 76 respectively. The number of students who have registered for the Level III course units in Zoology varies from 16 to 47 depending on the course unit. Total number of students registered for the B. Sc. Special degree programme in Zoology at the levels I and II of the special Degree programme is 07 and 07 respectively.

The department currently has 12 academic staff members (9 Senior Lecturers and 3 probationary Lecturers), 02 temporary Assistant Lecturers, 10 temporary Demonstrators, 2 Staff Technical Officers, 2 Technical Officers, 3 Lab Attendants, and 2 Laborers. The cadre position for the Professor of Zoology is vacant at present. A Senior Lecturer and two probationary Lecturers are on leave.

The department has one large lecture theatre, 02 large teaching laboratories, three research laboratories one of which has been converted to Molecular Biology research unit, Animal House with facilities for rearing aquatic and terrestrial animals for teaching and research work, outdoor fish rearing facilities, small departmental Library, and two small computer rooms.

The Central library and Faculty of Science library store a fair collection of books in Zoology and Zoology related fields. There are several personal computers in the computer rooms of the Department for the use of staff and students following the special degree programme in Zoology. Some of the computers in the computer centre have Internet access. In addition the students have access to computers in the Faculty computer unit and the computer centre of the University. The infrastructure and other facilities available in the department appear to be adequate for the satisfactory functioning of the department. Nonetheless, strengthening the lecture theatre facilities by the addition of one or two small lecture/seminar rooms could improve the delivery of lectures concurrently under the modular course unit system.

3. AIMS AND LEARNING OUTCOMES

Zoology is the scientific study of animals and their interactions. It includes a wide range of core areas, *i.e.* Cell Biology, Genetics, Developmental Biology, Anatomy, Physiology, Ecology, Behaviour, Taxonomy and Evolution, which are inevitably intertwined in the life of humans and environment, both positively and negatively.

Thereby, the scope of Zoology is extended into and overlaps with other disciplines such as Medicine, Veterinary Medicine, Agriculture and Environmental Science. As such, Zoology is a multidisciplinary subject with strong practical, experimental and field components.

Therefore knowledge on basic principles and concepts, practical skills, field techniques, hypothesis formulation and testing, group work, problem-based learning, and Information and Communication skills are key components of a graduate in Zoology.

3.1. Aims

The Department of Zoology aims to produce graduates who are competent in core areas in Zoology and who can contribute positively to the development of the country. Also the department aims to achieve the vision and mission of the university, which states as follows.

- (1). Vision: *To be an internationally respected, outstanding academic centre, committed to rigorous scholarship, academic freedom, sound moral values and social responsibility*
- (2). Mission: *To produce internationally-accredited, outstanding graduates who are innovative, analytical and adaptable with a life long love for learning; and to contribute to the advancement of knowledge and enrichment of educational, cultural, economic and natural environments of people and the region we serve.*

3.2. Learning Outcomes

In accordance with other universities in Sri Lanka, degree programme of the Department of Zoology designed to cater students at two levels. Graduates who study Zoology at General Degree level gain knowledge in core areas of Zoology during their first two years and selected applied aspects such as Entomology, Parasitology, and Crop protection etc., in their final year. Students who performed well in Zoology during their Level I and II examinations will be selected to follow the Special Degree programme in Zoology by interviews. Special Degree programmes in Zoology include courses that cover core areas at a greater depth and courses in applied fields in Zoology. In addition to the theory and practical courses offered, students in Special Degree programmes are required to carry out a research project, submit a report in the format of a dissertation based on the project.

On successful completion of the study programme,

B. Sc. General Degree students are expected to

- Gain knowledge and understanding in the diversity, structure and functions of animals including humans and their interactions with the environment.
- Learn how this knowledge and understanding can be applied to welfare of the human society
- Learn basic technical and intellectual skills necessary for the acquisition and analysis of data through laboratory and fieldwork.
- Have awareness on the use of zoological knowledge in various research and educational requirements of the country.

B. Sc. Special Degree students are expected to

- Gain detailed knowledge and understanding in the diversity, structure and functions of animals and their interactions with humans.
- Have the ability to collect, analyse and interpret zoological data and test hypotheses.
- Be able to record, quantitative and qualitative data accurately and analyse the data using appropriate statistical methods and interpret results.
- Develop range of personal and transferable skills such as critical ability, independence of thought, computer literacy and self directed learning
- Have gain the knowledge on the advances in the Biosciences and the related ethical issues along with their impacts on society.

4. FINDINGS OF THE REVIEW TEAM

4.1. Curriculum Design, Content and Review

Undergraduate Curriculum

Faculty of Science, University of Ruhuna offers modularized course unit systems for its study programs. The Review Team noted that the number of total credits that should be earned by the undergraduate student in order to get the degree differs significantly from that of the standard practice in most other national universities. In addition the credit rating for practical courses is also different from the norm. According to the Students Handbook 2006, Faculty of Science, a workload of 45 practical hours earns 2 credits

The present curricula offered by the Faculty of Science for students following Bachelor of Science degree contain a foundation programme which offers course units on English (Intensive course), skills in common disciplines, national heritage etc. This programme which carries non-degree credits is mandatory for the students. This programme if conducted properly would help to develop some important interpersonal skills of the students. In order to obtain the B.Sc. Degree, it is compulsory that students pass the identified course units in English. This is a good practice adopted by the Faculty in order to improve the English knowledge of the undergraduates.

The present curriculum offered by the Department of Zoology of the University of Ruhuna for the B. Sc. (General) and B. Sc. (Special) degree programmes was designed by the academic staff with the introduction of new modular teaching structure in 2003. The curriculum reflects adequate academic standards and enables students to achieve intended learning outcomes identified in the SER. The syllabi cover adequate subject matter in different areas of Zoology. Course units are offered at different levels of the program enabling the student to build up their knowledge and understanding.

The program in the first two academic years comprise of eight compulsory core course units viz. four theory course units (60 lecture hours each) and four laboratory course units (45 practical hours each). These core units offered in the first two years for all Biological Sciences students provide the basic knowledge on important core

areas such as origin of life & evolution, animal cell biology, animal histology and development, animal systematics, invertebrate diversity, vertebrate diversity, comparative animal physiology, human biology, animal genetics, and animal ecology together with relevant practical skills. The curriculum of these core course units indicates that it is designed to provide adequate knowledge to students in the core areas of Zoology to proceed to the next levels. However these course units are named as General Zoology I, II, III, and IV for theory course units and General Zoology practical I, II, III, IV for practical units. Hence the specific areas covered by the relevant course unit are not reflected in the names of the course units. The department may consider this issue during the next revision of the curriculum as the name of the course units followed by the student may appear in the degree transcript of the graduates.

In addition to the core units, the department offers level II four optional course units for any student in the biological science stream. Of these level II optional units, two course units (Research Methodology, Conservation and management of biological resources) are open even for the students in the physical science stream in the Faculty of Science. Provision of some exposure on these important areas to non-biology students is a good practice adopted by the department.

For the B. Sc. (general) degree programme, 16 optional course units (2 credits each including a practical component) are offered in the third year giving flexibility in the choice of course units. These units provide basic knowledge and skills in specific and applied areas of Zoology such as Entomology, Ecology, Parasitology, Immunology, Ornithology, and Aquaculture. The students also have an opportunity to select course units with current national interest such as Environmental Impact assessment, Environmental Pollution & Toxicology, Wetland management and conservation. Some of these course units are optional for all biology students or all science students. Provision of more flexibility in selecting course units in the third year of the degree programme is commendable.

However, the Review Team noted that the department has not identified the minimum number of level III Zoology credits that should be earned by a student following the general degree in biological science stream in order to claim that the student has followed Zoology as a main subject for the degree programme. The Review Team also feels that the department may consider giving an opportunity to the students to follow optional courses on Fish Biology and Fisheries as these areas are not covered by the present Zoology curriculum available to the undergraduate students. This is being stated as Fish Biology and connected topics are an important component of the subject of Zoology and students pointed out the need for this topic to be taught to them, to the reviewers.

The course units offered for the B. Sc. (Special) degree programme in Zoology helps to provide advanced knowledge and understanding in many topics of applied nature such as Entomology, Parasitology, Ecology, Animal behavior, Ornithology, Immunology, Molecular Biology and Genetics, Evolution and Biogeography. The practical component has been incorporated to these course modules, to provide adequate subject specific practical skills to the students following the special degree programme. In addition there are several skill development course modules in the curriculum such as Statistics and computation, Laboratory techniques in Biology, Research project and Assessment of key skills. Provision of specific skill development course modules to the special degree curriculum is commendable. These

course units could also help to develop some important interpersonal/transferable skills of the students.

In general the curriculum content of the courses offered by the department is of sufficient breath and depth in terms of subject coverage. It was also noted that the curriculum helps to provide some knowledge on topics of current interest. The programmes offered are at a suitable academic level and the programmes are organized to make suitable intellectual demands. The Review Team noted that there are sufficient opportunities for students to gain suitable subject knowledge and acquire subject specific and generic skills.

Curricula of Postgraduate Programmes

The Department of Zoology contributes to two M.Sc. programmes offered by the Faculty of Science viz. M.Sc. programme in Crop Protection and M.Sc. programme in Molecular Biology. M.Sc. Programme in Crop protection is conducted in collaboration with Faculty of Agriculture. Reviewers were informed that some academic staff members of the Department of Zoology serve as coordinators of the course modules on Entomology, Nematology, and Pesticide Pharmacology. In addition, some academic staff members of the department serve as coordinators of the M.Sc. programme in Molecular Biology which is conducted in collaboration with Department of Botany, Faculty of Science. The Review Team is unable to make comments on curriculum design, and content of these courses as the reviewers had no access to the relevant information.

Curriculum Review

According to the SER, the department has revised the general degree curriculum in 1987, 1991, 2001 and 2003. In 1987, the department had given a new option to the part III students to select either Limnology and Oceanography or Entomology and Parasitology. In 1991 the curriculum had been revised to give the general students an opportunity to specialize in Fish Biology (in the Department of Fisheries Biology) or in Applied Zoology (in the Department of Zoology) in the third year. In 2001, the Department of Zoology had changed the syllabi again by giving wider option for students in the third year as the Department of Fisheries biology started to offer Fish Biology as a full subject for the students following biological science stream. In 2003, the modularized course unit system has been introduced to the Faculty of Science and at present all the undergraduate students are following this new system. With the introduction of the new modularized course unit system, there is more flexibility and choice for the students following general degree programme for selecting course units.

The Review Team was informed that the syllabi for the modular course units system was reviewed by the “Faculty course coordinators committee”, which had two representatives (Head and a senior academic nominated by the Faculty Board) from each department. Thereafter course contents were reviewed at the Faculty Board and at the Senate before the syllabi were approved. Apart from that the curriculum revisions seem to be monitored at departmental level. Samples of records of departmental meetings in the past indicate that curriculum contents have been discussed at departmental meetings and appropriate steps have been proposed to incur revisions and expedite them.

Even though the undergraduate curriculum has been revised in several occasions, there was no evidence for obtaining the feedback from the students, alumni, potential employers and other stakeholders when revising the curriculum. The Review Team strongly feels that feedback from all stakeholders including potential employers, experts in the field, alumni, and students be considered in developing and reviewing all the curricula to improve the quality and relevance of undergraduate and postgraduate programmes. It is recommended to regularize the curriculum review process in the department and the Faculty.

When the above facts are considered, the Review Team is of the view that the aspect of Curriculum Design, Content and Review would be judged as GOOD.

4.2. Teaching, Learning and Assessment Methods

The Review Team noted that the department uses several approaches to provide appropriate learning experiences for the students following Zoology course units of the B.Sc. (General) degree programme. These are lectures, tutorials, laboratory work and field exercises. For the special degree programme extensive reading is expected as formal didactic teaching is reduced to a certain extent. In addition the students following the B.Sc. (Special) degree programme are required to present 5 seminars and carry out a research project on a selected topic under the guidance of a senior academic staff member. Teaching and learning activities in the Department of Zoology are aimed at equipping the students with the progressive acquisition of the subject knowledge and skills.

The Review Team had the opportunity to observe four lectures delivered by senior lecturers. The Review Team noted that most lectures are organized power point presentations but delivered in a less interactive manner. The Review Team noted that there are limited opportunities available to the students following general degree to develop their self-learning abilities. The department may consider exploring the possibility of modifying some of the teaching sessions of the students following general degree from being mainly teacher centered to be more student centered by introducing student centered learning components. The reviewers observed that the usage of the main library and faculty library was low during the review period but according to the library staff the extent of usage is variable and the numbers go up during examination periods.

Practical classes are designed to provide a variety of subject specific skills. The Review Team observed one practical class conducted for level I students. The students were provided with nearly fresh specimens of selected mollusks to study their diversity. It is commendable that the laboratories are well maintained by the non-academic staff of the department.

It was evident from the discussions held with the students that they spend much time for drawing of the specimens provided in the practical class, and write complete notes. Considering the modern trends in teaching and learning Biology, the department may consider giving more emphasis for the development of subject specific practical skills (especially in animal diversity practical classes) including observation and identification skills and analytical skills rather than developing artistic skills.

The students following the B.Sc. (Special) degree programme are able to improve their oral communication skills through presenting seminars on selected topics. Oral

presentation skills are evaluated and feedback is given to the students by the academic staff in order to improve their presentation skills. This is a good practice adopted by the department. Review Team observed two seminars presented by two students following Level II of the special degree programme for the assessment of key skills course unit. The standard of the presentations was satisfactory yet there is a potential for improvement.

The Review Team noted that the students following the theory courses are evaluated by *end of semester* written examinations whereas the practical courses in the both semesters in the first two years are evaluated by *end of year* practical examinations. The department may consider having end of semester practical examinations as it would be more advantageous for the students. At the discussions held with the students, they also expressed their preference to sit for the end of course practical examination if they are informed at the beginning of the course unit.

There is evidence that some examination papers are set by senior academic staff in the department and moderated by a local external examiner. Although answer scripts marked by the examiners were not available for the inspection by reviewers, Review Team was informed by the department that each answer script for general degree examinations is examined by two internal examiners and each answer script for the special degree examinations is marked by one internal examiner and one external examiner. Moderation and second marking by external examiners is a good practice for transparency and quality assurance of the degree programmes.

The Review Team had the opportunity to examine samples of question papers. In general questions have been formulated to achieve intended learning outcomes. However for the theory examinations for the General Zoology course units, students are expected to select any 6 questions out of nine questions and answer within three hours. This may have an undue advantage for the students as some students can omit studying important core areas of Zoology and obtain “A grades” for the relevant course unit. As these course units cover different core areas of Zoology, the department may consider modifying the format of the question paper by dividing them to several parts considering different core areas and restrict the choice of selecting questions from each part. The department may also consider introduction of continuous assessment components to the assessment methods.

Having evaluated the Teaching, Learning and Assessment Methods, the Review Team is of the opinion that this component needs improvements, but yet could be rated as GOOD.

4.3. Quality of Students including Student Progress and Achievements

The student profile along with the average Z scores of the undergraduate student intake to the Faculty of Science was provided in the SER. It showed that most of the students came from the relatively disadvantaged areas such as Uva, Sabaragamuwa provinces and the Hambantota district of the Southern Province, with much smaller numbers from the Western Province and North Central Province. There were no students from the northern and the eastern provinces. The average Z score over the past three academic years showed that the percentage of students in the 1.5-2.0 category had decreased from 20% to 0.5% from 2003 to 2006 while the percentage in the 1.0-1.49 category has increased from approx. 57% to approx. 87% over this period. Given this situation, the Faculty of Science and the department seem to be

making a very good effort to increase the quality of their graduates through the introduction of new course curricula, making successful completion of a basic English course (going from Level 1 (1st year) to Level 3 (final year) and a computer literacy course compulsory to obtain the B.Sc. degree.

The Review Team met a sample of students following the 1st year to the 2nd year general degree programme and third (level 1) and fourth year (level 2) students following the special degree programme in Zoology for a discussion. There was only one student from the third year general degree programme and hence not much can be said of students' opinion on this level. In general, the students were forthcoming in their views. Attendance at lectures was stated to be good. They were very concerned with prospects for employment after studying Zoology as a subject in a general degree and seemed to be of the view that Zoology offered fewer opportunities for employment within Sri Lanka in comparison to other biological science subjects. This aspect should be looked into more by the department. There was no evidence that the department has conducted a tracer study on the B.Sc. (General) graduates who have followed Zoology course units as a subject. In the opinion of the Review Team, such a tracer study would have helped the department to monitor the achievements/performance of their graduates.

The students following the level I and II of the general degree programme were more interested in following Special degree programmes in Chemistry or Botany. Nonetheless, the students following the Special degree programme in Zoology at present were all keen on Zoology as a subject and said that they had selected Zoology as the subject of specialization due to their interest in it rather than being forced to due to inability to follow other courses. They were also keen to follow postgraduate degrees in their chosen special areas of study. The Standard of English of students following special degree seems to be satisfactory. The tables of data on student grades presented in page 19 of the SER indicates satisfactory achievement of academic standards overall. The records of the department indicate that out of a total of 32 special degree students who have graduated from 1999 to 2006 all are employed with 7 following postgraduate degrees. A student has won an award offered by the Faculty.

Another indication of the quality of the special degree students was the final year student research projects. The range of topics was good and covered some very important environmental issues with a Zoological background. Some improvement in the language and the presentation of the final copies deposited in the library should be done. The reviewers noticed some comments by an examiner on the level of plagiarism in a particular dissertation. While plagiarism is certainly not confined to any one university in Sri Lanka, it would be best if greater attention is given to instructing students against plagiarism and if teachers adopt more careful analyses of students work to detect and penalize cases of plagiarism.

Having considered carefully the Quality of Students including Students' Progress and Achievements, the Review Team is of the opinion that this aspect of the subject review can be rated as SATISFACTORY.

4.4. Extent and Use of Student Feedback

According to the SER and the information provided by the staff, the department has regularly obtained student feedback on its undergraduate programmes mainly in

informal ways. In 2005 the department has started to use questionnaires at the end of the lecture series to get the feedback from the students. The lecturer is advised to obtain the student feedback using the departmental evaluation form and critically evaluate their teaching methodologies. This is a good practice adopted by the department. Continuation of obtaining student feedback is essential for the improvement of the quality of teaching.

The Review Team had the opportunity to inspect the questionnaires and some responses received. It was evident that a questionnaire with relevant teaching and course content questions, (in Sinhala only) has been given to students by some lecturers at the end of the lecture series. For some course units, there were no structured questionnaires but students have given comments generally on their teaching. Majority of students have expressed good on the quality of the lectures in all aspects. The Review Team recommends using a more focused structured questionnaire to obtain the students' feedback on course contents as well as teaching methods at the end of each course unit. Review Team also suggests to incorporate a section to get students feedback on the practical component of each of the course unit offered by the department.

The student representatives at the Faculty Board also give some feedback to the faculty on student problems including academic matters. However, there was no evidence for student representation at the departmental committees. The department may consider establishing "staff student liaison committees" and holding regular meetings with the students to discuss the matters related to the academic programmes. In addition, the department may consider having regular departmental meetings to discuss the feedback obtained from the students and the steps to be taken to improve the quality and relevance of the study programmes offered by the department. Further, a formal mechanism to convey the action taken on student feedback may also be established.

There was no evidence of any formal mechanism to obtain student feedback from Postgraduate students. Perhaps the small numbers of students participating in these programmes provide closer interactions with the staff and this enables feedback at a personal level.

Having considered carefully the Extent and Use of Feedback systems, the Review Team is of the opinion that this component can be rated as SATISFACTORY.

4.5. Postgraduate Studies

The Department offers M.Phil and Ph.D. degree programs by research. In addition, academic staff members are involved in teaching of two M.Sc. programmes offered by the Faculty of Science viz. M.Sc. in Crop Protection and M.Sc. in Molecular Biology. M.Sc. in Crop Protection is conducted by the Faculty of Science in collaboration with Faculty of Agriculture. M.Sc. in Molecular Biology is conducted mainly by the Department of Botany and Zoology. Some staff members of the department are involved in teaching these M.Sc. courses.

The department has a good academic strength of nine senior academics with PhD qualifications, among the thirteen permanent allocated cadres at present. Majority of them have acquired foreign university qualifications. The senior academic staff members of the department have expertise in various core areas and applied areas of Zoology. These members together with the staff from the Department of Botany and

Faculty of Agriculture are capable of effectively steering these M.Sc. programmes. However, the students following the taught M.Sc. Programmes were not available for discussion during the site visit period.

Department has so far produced 3 PhD degrees and 9 MPhil degrees. At present only one student is following the M.Phil degree programme in Zoology. This post graduate student, who is attached to the government sector, is very confident with his programme and satisfied with the research guidance given by the supervisors.

Facilities for postgraduate degrees by research and taught courses are up to the required standards and facilities are well maintained.

Academic staff of the department felt that trend in studying postgraduate degrees in Zoology has been declined, although funds for research have been secured by staff members. Qualifications and the research publications of the staff members indicate the potential and capability for further development. The Review Team is of the view that the department should consider developing a strategy to enhance the postgraduate studies in the department in order to transfer the research skills of the staff to the next generation and to increase the research out put of the department.

When considering the aspect of Postgraduate Studies, the Review Team is in the opinion that this aspect needs improvement, but yet could be rated as ranked as SATISFACTORY.

4.6. Peer Observation

The department has started a formal procedure for peer observations recently. Staff members feel positively towards a peer review process and it is being operated since early part of 2006. Reviewers observed that six staff members out of 12, mostly seniors have been subjected to peer observation in the department. In accordance, there was documentary evidence to support this.

The Review Team felt that the questionnaires currently used by the department for peer review process may have a room for improvement with contents of learning outcomes etc. It is relevant to correlate the peer review with student feedbacks provided by students to assess the actual self teaching improvements of the staff members.

At present the department practices external second marking for undergraduate degree programmes. External examiners are used for moderation of all question papers, and second marking of special degree answer scripts. Internal second markings of the general degree answer scripts are being carried out under the supervision of senior academics of the department. Perhaps this could be considered as one way of indirect peer review for young staff. However, all practical classes conducted by the junior staff of the Department come under the purview of a senior academic member who is the lecturer responsible for the particular course.

The department may continue a formal mechanism for peer observation of both the junior and senior staff members for the improvement of the teaching and learning process.

Having considered carefully the extent and use of Peer Observations, the Review Team is of the opinion that this component can be rated as SATISFACTORY.

4.7. Skills Development

As indicated by the section on curriculum design, content and review, the department has introduced a set of new course modules to the general and special degree students in order to provide necessary subject specific skills and generic skills. Provision of skill development courses to the curriculum is a good practice adopted by the department.

With the introduction of new curriculum, the Department of Zoology offers 4 separate practical course units on General Zoology with considerable amount of practical work which enables the students to develop subject specific practical skills in core areas of Zoology. During the discussion held with the students, it was revealed that students spend lot of time outside the practical classes in completing the practical records. The Review Team also had opportunity to observe one practical class on Molluscan diversity and noted that the students spend considerable amount of time in drawing the specimens. The department may identify the most important specimens that should be given to a particular class. Steps may be taken not to overburden the students giving large number of specimens to study within a limited period of time of 03 hours. The department may also consider asking students to observe the important characteristics of specimens and making accurately labeled sketches (for the practical in relation to the diversity) showing their important features and handing over the practical records before they leave the class. This will not harm the development of observation skills as well as recording skills of the students.

The department provides practical course modules in Applied Zoology for the general degree students to improve the practical skills in the study of Zoology and the environment. However, the component of field visits need to be increased more than at present. This was stated by most of the students especially the general degree students, who met the reviewers.

The Review Team noted that the students following the Special degree have more opportunities for skill development. The research project is aimed at planning and executing a project independently. The students are expected to be proficient in appropriate techniques, develop research skills and record and analyse data using appropriate statistical methods and interpret the results logically. The research project dissertations of the final year special degree students showed a wide range of skills being developed. One aspect that needed to be improved is that the final version of the student research project which is made available in the library. As these are open to scrutiny by persons outside of the university, more effort should be made into improving the grammar and spelling mistakes of the students before they are deposited in to the library.

In addition to the research project, there are several skill development course modules in the special degree curriculum such as Statistics and Computation, Laboratory Techniques in Biology and Assessment of Key Skills. The course unit on Assessment of Key Skills is based on seminar presentations of the special degree students where each student does 5 seminars of 45 min duration each. An observation of two such presentations by students of this course showed a very wide range of topics which is a good feature. However, the presentation skills of the students need to be improved. In addition to the seminars, the students are required to carry out investigations in the field or laboratory and should present their team work as scientific reports. Provision of specific skill development course modules to the special degree curriculum is

commendable. These course units could also help to develop some important interpersonal/ transferable skills of the students.

The group projects of the students showed an interesting range of topics and opportunities for development of team work and writing skills. Students also wished that they could follow more computer based zoological courses. The undergraduate research project opportunity available to even general degree students is a very good step. This opportunity was also advertised on notice boards at several points of the department. Even though there are restrictions on number of common computes and time allocated per student on computer use, the situation at Ruhuna University is good in comparison to the general situation in other Sri Lankan universities. The Head of the Department of Computer Science and Head of the Computer Unit was very keen on making available resources from the computer unit to the other departments such as Zoology. He explained about the Computer Literacy Course (30 hours of lectures and 60 hours of practicals) and other more advanced courses available to the non-computer science students of the university. The constant problem of insufficient bandwidth for internet users was being mitigated to some extent at present. He was also in the process of creating an email server through which all students of the Faculty of Science could obtain e- mail accounts. This would be a very useful step towards e-based teaching and learning. This would be a very important type of experience for the students.

The Review Team did not have an opportunity to meet with the person responsible for career guidance programmes of the university. However, based on the comments made by the students it appears that more effort should be put into making students aware of the opportunities for employment within Sri Lanka and also of research opportunities both within and outside the country.

The Review Team is satisfied that the curriculum of the Department of Zoology is designed to facilitate the development of adequate skills and the assessment methods are designed to evaluate the students' interpersonal skills as well as their subject specific skills. However, there is no evidence for consulting employers regarding the skills they require from graduates who have done Zoology as a subject.

The Review Team is of the view that this aspect needs some improvements yet it can be rated as GOOD.

4.8. Academic Guidance and Counseling

Academic guidance and counseling are mainly handled by the university and the faculty. The counseling centre is located in the Science Faculty Complex. The Dean of the Faculty has provided Student Handbook, which gives academic guidance comprehensively. Lecture based on Psychology for first year students are conducted during orientation programmes.

Four members of the academic staff of the Department of Zoology serve as student counselors out of ten in the Faculty, which reviewers felt strength of the department. Members of the staff offer counseling to students in an informal and formal ways and it has been revealed during the discussions and documentary verifications. Student counselors have an opinion that adequate training on students counseling to be provided by the university. Further, three of senior staff members of the department are presently following a training programme on "Psychology and Counseling", as its self fee levied programme.

On student's request, "Students ad-hoc committee" with senior staff has been formed at the faculty level to resolve and students based problems at the faculty level, which is appreciated.

Academic coordinator for a batch of 8-10 students has been appointed to assist the students in relation to the academic matters especially selecting optional course units in all levels and special degree courses. Most students interviewed held the view of easy accessibility of the academic staff of the department for such interactions. The Review Team was informed that the information on scheduled practical classes and lectures at the beginning of each semester and printed schedules are displayed on departmental notice boards. Course coordinators and senior practical in charge are appointed to discuss the problems related to the practical work and lectures.

At the discussions held with the students it was revealed that number of workshops have been conducted in the university on Reproductive Health and Counseling. The students feel that coordination between faculty (department) and centre in conducting lectures and programmes would enable the biological science students to attend these programmes.

Having considered all aspects of Academic Guidance and Counseling available in the Faculty/Department of Zoology, the Review Team is of the view that this section could be rated as GOOD.

5. CONCLUSIONS

The good practices, weaknesses and the judgment for eight aspects considered in the subject review are summarized as follows. The overall judgment was arrived after summarizing judgments of all aspects of provision.

1. Curriculum Design, Content and Review

Good Practices/Strengths

1. Modularized course unit system
2. Contents of courses have adequate breadth and depth
3. Flexibility in the choice of course modules
4. Opportunities to develop subject related skills and interpersonal skills
5. Provision of optional courses for non –biology students
6. Provision of course units for skills development
7. Faculty course coordinators committee for curriculum review

Weaknesses

1. Students, alumni, potential employers and experts in the relevant fields are not consulted in revising the curricula
2. Some optional courses need to be introduced

Judgment: Good

2. Teaching, Learning and Assessment Methods

Good Practices/Strengths

1. Use of variety of approaches to provide appropriate learning experiences
2. Providing opportunities to develop variety of subject specific skills
3. Organized power point presentations by the lecturers
4. Field studies to strengthen practical classes
5. Promote self learning skills of students following the special degree
6. Formulating questions to achieve intended learning outcomes
7. Moderation of question papers by external examiners
8. Well maintained laboratories

Weaknesses

1. Less opportunities to promote self learning abilities of the students following the general degree
2. Less field studies held for general degree students
3. No Continuous Assessment methods in most course modules
4. End of year practical examinations for semester based practical courses

Judgment: Good

3. Quality of Students including Student Progress and Achievements

Good Practices/Strengths

1. Opportunity for the students to improve English knowledge
2. Opportunity to win limited number of special awards for good students

Weaknesses

1. Lack of data on the graduates profile (general degree)
2. Less awareness among the students of their employment opportunities after following Zoology as a subject

Judgment: Satisfactory

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

Good Practices/Strengths

1. Student feedback on teaching is obtained through a questionnaire
2. Provision of the student representatives, to discuss the issues, regarding academic matters at the Faculty board.
3. Flexibility of staff members

Weaknesses

1. No formal student-staff liaison committees at the departmental level to obtain students' feedback and unavailability of formal mechanism to convey the action taken on student feedback
2. No evidence for analyzing outcome of students' questionnaire for improved teaching.

Judgment: Satisfactory

5. Postgraduate Studies

Good Practices/Strengths

1. A postgraduate student conducting research under the supervision of senior staff member
2. Contribution of the department to two taught postgraduate programme
3. Facilities available for postgraduate research

Weaknesses

1. Limited number of postgraduate students
2. Need of commencing new postgraduate degree programmes to serve for the area and its local community.

Judgment: Satisfactory

6. Peer Observation

Good Practices/Strengths

1. Commencement of formal peer observation for academic staff members' teaching
2. Informal peer observation for junior staff members
3. Conduct of practical classes under the supervision of senior staff members
4. Moderation and second marking by peers

Weaknesses

1. Lack of regular mechanism for peer observation of senior teachers
2. The questionnaire needs to be revised
3. Lack of analyses and improvement of teaching

Judgment: Satisfactory

7. Skills Development

Good Practices/Strengths

1. Identification of development of skills as learning outcomes.
2. Designing the curriculum to ensure the development of subject specific skills and interpersonal skills

3. Employment of satisfactory mechanisms to develop subject specific skills and interpersonal skills
4. Designing assessment methods to evaluate subject specific skills and interpersonal skills.
5. The department is fortunate in having a set of non academic staff that are supportive of academic work and also maintain good laboratories and well maintained equipment.

Weaknesses

1. No consultation of the employers regarding the skills they expect from graduates.
2. Only few students get the opportunity to develop presentation skills and research skills since this opportunity is given to only the students following the special degree

Judgment: Good

8. Academic Guidance and Counseling

Good Practices/Strengths

1. Providing academic guidance during the orientation programme
2. Most Senior Lecturers in the department are available for students for both academic and personal counseling and guidance
3. Good student/staff relationships
4. The Department of Zoology has a very dedicated staff

Weaknesses

1. The counselors are not given training on professional counseling.

Judgment: Good

Based on the observation made during the visit by the Review Team and discussed above, the eight aspects were judged as follows

Aspect reviewed	Judgment given
Curriculum Design, Content and Review	Good
Teaching Learning and Assessment Methods	Good
Quality of Students Including Student Progress and Achievements	Satisfactory
Extent and Use of Student Feedback, Qualitative and Quantitative	Satisfactory
Postgraduate Studies	Satisfactory
Peer Observations	Satisfactory
Skills Development	Good
Academic Guidance and Counseling	Good

The overall judgment is suspended

6. RECOMMENDATIONS

1. The department may consider exploring the possibility of modifying some of the teaching sessions of the students following general degree from being mainly teacher centered to be more student centered by introducing student centered learning components.
2. Staff Development Centre of the University should involve in providing training on teaching methodologies for young academics in order to enhance their teaching competencies.
3. The component of field studies need to be increased more than at present. The first and second year students who follow Zoology course units could be given more field practical work.
4. The department may also consider introduction of continuous assessment components to the assessment methods.
5. Optional course units on Fish Biology and Fisheries need to be included in the curriculum to give a reshape for Zoology overall curriculum.
6. The department may consider introducing a course unit on in-plant training for undergraduate students in their final year of the degree programme to get exposure to the real life situations.
7. Continuation of obtaining student feedback is essential for the improvement of the quality of teaching The Review Team recommends to use a more focused structured questionnaire to obtain the students' feedback on course contents as well as teaching methods for each course unit. Review Team also suggests incorporating a section to get students feedback on the practical component of each of the course unit offered by the department.
8. It is recommended to develop a strategy to enhance the postgraduate studies in the department in order to transfer the research skills of the staff to the next generation and to increase the research out put of the department. Present postgraduate degree programme to be refreshed with new innovations to serve the area/region.
9. It is strongly recommended that the next curriculum revision be held with all stakeholders' participations and their consents.
10. The Faculty/Department may consider adopting a standard credit based course unit system when revising the curriculum
11. Computer Services access needs to be provided to all levels to build up their IT skills.
12. Carrier guidance unit should have direct impact on students seeking employability
13. It is recommended that the setting up academic time table be coordinated with other sections such Carrier guidance unit etc. to avoid any clashes in between subject combinations.

7. ANNEXES

Annex 1. AGENDA FOR THE SUBJECT REVIEW VISIT

Day 1 – 16.05.2007	
08.00 - 08.30	Private Meeting of Review Panel with QAA Council Representatives
08.30 - 09.00	Discuss the Agenda for the Visit
09.00 - 09.30	Meeting(s) with the Vice Chancellor/ Chairman, Internal QA Unit/ Dean/ Head of the Dept/ Head, Faculty QA Cell etc.
09.30 - 10.30	Observing Teaching – Practical Class – Level I
10.30 - 11.30	Department Presentation on the Self Evaluation Report (<i>Tea</i>)
11.30 - 12.30	Discussion
12.30 - 13.30	<i>Lunch</i>
13.30 - 14.00	Observing teaching – Lecture – Level I
14.00 - 15.00	Meeting with Undergraduate Students
15.00 -16.00	Meeting with Department Academic Staff (<i>Tea</i>)
16.00 -17.00	Observing Departmental Facilities
17.00 -18.00	Brief Meeting of Reviewers
Day 2 - 17.05.2007	
09.00 -10.00	Observing Other Facilities (Library, Computer Centre, etc.)
10.00 - 11.30	Observing Documents / Lectures (<i>Tea</i>)
11.30 - 12.30	Meeting with Technical Staff and Other Non-Academic Staff
12.30 - 13.30	<i>Lunch</i>
13.30 - 14.30	Student presentation
14.30 -15.30	Meeting with Special Degree Students
15.30 -16.00	Meeting with Student Counselors (<i>Tea</i>)
16.00 -16.30	Meeting with Postgraduate Students
16.30 -17.00	Meeting of Reviewers
Day 3 – 18.05.2007	
09.00 - 09.30	Observing Teaching Lecture – Level II
09.30 - 10.00	Observing Teaching Lecture – Level III
10.30 - 11.00	Reviewers Private Discussion (<i>Tea</i>)
11.00 - 12.00	Meeting with Head and Staff for Reporting
12.00 - 13.00	<i>Lunch</i>
13.00 - 17.00	Report Writing (<i>Tea</i>)

Annex 2. LIST OF SUPPLEMENTARY DOCUMENTS OBSERVED

1. Curriculum Design, Content & Review

- 1.1 Student Handbook
- 1.2 Departmental meetings regarding curriculum revision
- 1.3 Faculty meetings regarding curriculum review

2. Teaching, Learning & Assessment Methods

- 2.1 Organization of academic work
- 2.2 Teaching & learning materials
Lecture notes/Reading materials for lectures/Record books for lectures /
Practical schedules/Record books for practicals/Tutorials
- 2.3 Assessment methods
Student practicals/Continuous assessments/List of examiners/
Marking schemes & model answers/External examiners comments/Exam
papers

3. Quality of Students, Student Progress & Achievements

- 3.1 University entrance qualifications (Z-score values)
- 3.2 Results (Confidential - available with the Head can be provided on request)
- 3.3 Final achievements of students

4. The Extent & Use of Student Feedback, Qualitative & Quantitative

5. Postgraduate Studies

- 5.1 By laws – Post graduate studies
- 5.2 Interaction with other departments, faculties, universities & other institutes
- 5.3 Post graduate supervision and dissertation

6. Peer Observation

- 6.1 Comments sheets

7. Skills Development

- 7.1 Students seminars
- 7.2 Students presentations & attendance
- 7.3 Undergraduate individual project work
- 7.4 Undergraduate group project work
- 7.5 Special Degree dissertation
- 7.6 Students society work

8. Academic Guidance & Counseling

- 8.1 Departmental information for new students
- 8.2 Student guidance
- 8.3 Student advisory/counseling activities
- 8.4 Annual reports
- 8.5 Practical attendance

Other Materials

- Research grants/Publications