

# **SUBJECT REVIEW REPORT**

**DEPARTMENT OF BOTANY**



**FACULTY OF SCIENCE  
UNIVERSITY OF RUHUNA**

27<sup>th</sup> to 29<sup>th</sup> October 2005

**Review Team :**

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## **1. SUMMARY OF THE PURPOSES AND AIMS OF THE SUBJECT REVIEW PROCESS**

This review was conducted by a team comprising of Prof. S. A. Kulasoorya, Senior Professor of Botany, University of Peradeniya (Chairman), Prof. N. K. Dangalle, Senior Professor of Geography, University of Kelaniya and Dr. M. Printhan, Senior Lecturer in Botany, Eastern University of Sri Lanka. The main purpose of the review was to evaluate the progress made by the Department of Botany, University of Ruhuna, in the teaching of the subject of Botany as claimed in their self-evaluation report. The review report primarily deals with the eight aspects listed below.

- Curriculum design, content and review.
- Teaching, learning and assessment methods.
- Quality of students including student progress and achievement.
- The extent and use of student feedback, qualitative and quantitative.
- Postgraduate studies.
- Peer observation.
- Skills development.
- Academic guidance and counseling.

### **1.1 The Review Process**

The review team having studied self-evaluation report submitted by the Department supplemented the evidence thus available by a 3-day visit to the University of Ruhuna.

During this visit the team had discussions with the Vice-Chancellor who outlined the vision and the mission of the University and future plans to make this institution not only an internationally respected centre of excellence, but also to establish close interactions with the corporate sector with the objective of producing high quality graduates possessing entrepreneurial competence.

The meeting with the Dean and the Heads of the seven Departments in the Faculty of Science enabled the team to get a perspective of the subject of Botany in relation to the other major subject areas taught in the Faculty and the links between Botany and certain courses offered by other departments which strengthen the basic knowledge and competencies expected of graduates in the natural sciences.

The team then had an opportunity to witness a multimedia presentation made by a Senior Lecturer in Botany which comprehensively covered the progress so far made by the department with respect to all the aspects included in the self-evaluation report. It updated the information contained in the report and provided valuable, additional evidence. Based upon such evidence, major revisions were done to certain sections of the self-evaluation report.

The team next observed a lecture on Molecular Biology conducted by a Senior lecturer for level II students and also visited a laboratory class on Algal Diversity for level I students of the B.Sc. General Degree course. The visit to the laboratory enabled members of the review team to talk to the students as well as the temporary staff who functioned as Demonstrators in the lab class.

The next meeting with the Technical and non-academic supporting staff was useful in getting a first hand view of this category of staff with regard to the courses offered, their roles in making the programs effective and their perception of the students and student progress in academic work. This meeting also gave an opportunity for the supporting staff to indicate their aspirations and problems and even suggest ideas for the improvement of the department.

The final meeting for the day with the academic staff of the department enabled the team to explain the purpose and modalities of the review process and win over their confidence which we believe facilitated securing reliable evidence.

The activities on the following day commenced with two members of the team visiting the departmental and faculty libraries and the computer unit of the faculty, while the Chairman visited the research laboratories, equipment room, student common room and plant houses in order to make an assessment of the facilities available in the department.

All three members of the team then went through documents such as examination results, student special project reports, research publications, and postgraduate theses etc, submitted by the department for scrutiny.

The team next sat through seminars given by two Final Year, Special Degree students. These were not subject oriented research seminars, but presentations based primarily upon literature reviews in areas of general interest outside the subject area of Botany. This we felt was a novel approach to enhance information gathering, analysis and presentation skills of students.

The open discussion the team had with a common gathering of students of levels I, II, III and IV offering courses within the subject area of Botany was very informative and stimulating. Having sensitized the students by the type of high profile graduates the university expects them to be, the team stimulated them to present their views and perceptions regarding the strengths, weaknesses and problems connected with the teaching of Botany. The general consensus appears to be that they are satisfied with the programs and facilities. Some cited a few problems with the heavy work load and the limitation of time and reference text books as constraints for them to move from teacher centered to student centered learning. The team was impressed by the active participation of the students in the discussion, particularly from the level I batch, which is a positive development.

The team then observed another lecture given to level-I students on genetic, transformation and transduction. Activities on the 2<sup>nd</sup> day ended after a wrap up meeting with the academic staff members of the department during which clarifications were sought regarding the data provided on the eight aspects under review.

Day-3 was spent at a meeting with a group of post-graduate students following a taught M.Sc. course, report writing and a final concluding meeting with the Department Head and some academic staff.

## **2. THE UNIVERSITY AND THE DEPARTMENT**

The Department of Botany 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 offered only a General Degree in Science initially, a Special degree program in Botany commenced in 1982 in collaboration with the University of Kelaniya.

The department which started with a cadre of 6 academic members catering to 12 students has now developed and expanded to cater to some 400 General Degree students and 20 Special degree students. Staff strength has also increased to 13 permanent and 12 temporary academic members, 4 technical officers and 8 other supporting staff.

Infra-structure facilities have also expanded and the department currently possesses one large lecture theatre, 2 large elementary and 2 small research laboratories together with a small room converted to a reasonably well equipped Molecular Biology laboratory. These

buildings together with a seminar room and a computer room with intranet and internet facilities and two plant houses, 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 class rooms could improve the delivery of lectures under the modular course unit system.

The Department caters for both General and Special Degree programs which were reviewed. The modular course units it offers together with the enrolled student numbers are given below:

### ***B.Sc. General Degree***

**Level I (Compulsory):** Number of students - 198

Scientific Approach & Biometrics.

Plant Diversity

Unity & Evolution Genetics.

Plant Anatomy

Plant Ecology

Plant Systematics

**Level II (Compulsory):** Number of students - 120

Microbiology

Plant Pathology

Molecular Biology

Environmental Science

Plant Physiology & Biochemistry

Soil Plant Relationships

**Level III (Optional):** Number of students - 137

Advanced Ecology

Horticulture, Floriculture & Landscaping

Advanced Microbiology

Advanced Plant Pathology

Cropping Systems

Forestry

Food Technology

Tissue Culture

Weed Biology

Agricultural Management

Advanced Molecular Biology

Advanced Plant Physiology

Advanced Environmental Science

Pasture Science

Economic Botany

Genetic Engineering

Biotechnology

Plant breeding

### ***B.Sc. Special Degree***

**Level IV** (Special Degree Level I & Level II courses): Number of students - 11

Principals of Horticulture, Floriculture & Landscaping\*

Microbial Ecology

Food Technology

Plant Cell and Tissue Culture

Ecotoxicology

Biostatistics

Applied Microbiology

Ecological Plant Pathology

Genetic Engineering and Biotechnology

Advanced Plant Physiology II\*

Advanced Environmental Science\*

Grassland Management

Techniques in Plant Breeding

Experimental Plant Physiology & Biochemistry

Advanced Ecology\*

Advanced Plant Pathology & Virology\*

Forestry & Forest Management

Weed Biology & Management

Wood Science

Advanced Plant Systematics

Biogeography

Ecophysiology

Seed Physiology & Technology

Conservation and Management of Biological Resources

Group Project to Develop Practical Skills

Training Proper Use of Equipment

\*Courses offered at Level III for the General Degree program, supplemented with some additional lectures.

### ***M.Sc. Course in Plant Protection (Jointly with the Faculty of Agriculture)***

M.Sc. in Crop Protection is a two academic year course. Each academic year will comprise of two semesters. Each semester is 15 weeks long. Lectures and practicals will be held on Saturdays and Sundays from 9.00 a.m. to 5.00 p.m. Usually, for all lectures, practicals, and tutorials, 15-hrs work is considered as one credit. This norm may vary by  $\pm 5$  lecture hours, as decided by the respective lecturers.

The course consists of 3 divisions as follows:

- Course modules
- Assignments
- Research project

### ***Course Modules and Co-ordinators:-***

Statistical methods and design of experiments

experiments	- Prof. S.P. Samarakoon
Plant pathology	- Dr. S. Hettiarachi
Plant virology	-Dr. Manel Dassanayake
Entomology	- Dr. Vineetha Wickramasinghe
Nematology	- Dr. Keerthi Mohotti
Weed science	- Dr. P.H.A.U. de Silva
Integrated pest, vector and disease Management	- Prof. Rohan Rajapakse
Pesticide pharmacology	- Dr. H. Wegiriya
Biotechnology in crop protection	- Dr. P.D. Abeysinghe
Crop plants and environment	- Prof. M.P. de Silva
Soil – Plant relationships	- Dr. S.D. Wanniarachchi
General topics related to crop protection-	- Prof. Gamini Senanayake - Prof. Mahinda Wijerathne

### ***Course Modules:-***

There are 12 compulsory course modules listed as follows:

- CP 1.0 Statistical methods and Design of experiments
- CP 2.0 Plant Pathology
- CP 3.0 Plant Virology
- CP 4.0 Entomology
- CP 5.0 Nematology
- CP 6.0 Weed Science
- CP 7.0 Integrated Pest, Vector and Disease Management
- CP 8.0 Pesticide Pharmacology
- CP 9.0 Biotechnology in Crop Protection
- CP 10.0 Crop Plants and Environment
- CP 11.0 Soil – Plant Relationships
- CP 12.0 General Topics related to crop protection

### ***Assignments:-***

***Literature Retrieval and Scientific Report Writing:*** This section covers theory and practice of literature survey, literature review and report writing. The students learn how to carry out a systematic literature search for a subject in their field of study. A student should write 2 reports: a paper on literature retrieval on a selected title, and a research proposal. This part of the course must be completed before the commencement of the research project. There shall be a deadline, decided by the course coordinator, for the submission of each report. Any student who fails to submit reports in time will get zero marks, unless he/she can provide a proof of acceptable reason.

**Seminars:** Five seminars have to be presented by each student during their second year of the course. The duration of each seminar shall be 20 to 30 minutes followed by 15 minutes discussion.

**Analysis of a problem in crop protection:** This part is set up for students in order to train and analyze individually or in a team, the social implications of a certain problem in crop protection. The problem can be self-selected in the relevant field.

### **Research Project**

A thesis in any one of the following disciplines:(Pathology/ Entomology/ Nematology/ Weed Science/ Virology) shall be presented for evaluation after carrying out a research project in the relevant field and the duration of the project must be not less than two semesters. The research project shall be carried out under the supervision of a member of the academic staff after successful completion of the first year. When the principal supervisor is not from the University of Ruhuna, in addition to the principle supervisor, a supervisor should be named from the University of Ruhuna. When the research is carried out in an institution out side the University of Ruhuna, at least one supervisor should be from that institution. The thesis should be handed over to the SAR/examinations at the end of the course, on a date specified by the course coordinator, and it will be evaluated at a thesis defense examination consisting of a panel of a jury appointed by the controlling body.

**Project Thesis:** The research report/thesis shall consist of the candidate's own account of his/her research. It must form a distinct, original contribution to knowledge based on research conducted by the candidate.

## **3. AIMS AND LEARNING OUTCOMES**

### **3.1 Aims and Objectives**

The primary aim of the Department is to contribute to the achievement of the Vision and the Mission of the University as stated below:

**Vision** – To be an internationally respected, outstanding academic centre committed to rigorous scholarship, academic freedom, sound moral values and social responsibility.

**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 environment of the people and the region we serve.

The **major objectives** of the teaching programmes are:

- To ensure that all students in Botany have opportunities to study and develop an interest in plants and plant populations, both as managed crops and natural vegetation and to convey their knowledge and interest to society at large.
- To provide a scientific understanding of the means of exploitation of plants utilizing the basic knowledge in Botany which they have acquired.
- To ensure the continued supply of high quality graduates in par with the needs of our society through the delivery of high quality teaching in a cost effective manner.

- To support the State policies in promoting economic growth and competitiveness and in rural and urban development of Sri Lanka through the provision of an efficient and effective Tertiary Education Programme in Applied Sciences.

### **3.2 Learning Outcomes**

After the completion of the degree programmes, students are expected to have:

- Gained knowledge and understanding of the discipline of Botany and its related fields.
- Learnt how such knowledge and understanding could be applied to research, field work and to any other place of work.
- Developed their personal skills in scientific method, data handling and interpretation, information management, oral and written communication etc.
- Gained laboratory and field work experience in research.
- Developed skills for self directed learning.

## **4. THE OVERALL JUDGEMENT - Suspended**

## **5. FINDINGS ON THE EIGHT ASPECTS REVIEWED**

### **5.1 Curriculum Design, Content and Review**

The major design of the curricula having three levels for the General Degree and four levels for the Special Degree is satisfactory and is in consonance with what is practiced in other universities. Having all the courses offered during levels I and II as compulsory may be warranted to impart the basic knowledge in the subject necessary to effectively follow the diverse advanced courses offered during levels III and IV. If the same situation prevails in the other subjects that go into the degree programmes, then the work load of the students during the first two years is bound to be heavy with little flexibility and very limited time for self study and library work. This design therefore confines the opportunity for General Degree students to gain self directed learning, to their final year. In fact this was pointed out by the students who felt that this is an impediment to move from teacher centered learning to student centered learning. It may perhaps be desirable to review the curriculum design at the Faculty level and explore the possibility of extending some flexibility even during the level II, second year general degree programme.

The curriculum content in the original report submitted by the Department to the Quality Assurance Unit, had virtually no information on the contents of the courses included in this section. It was found that the contents of the courses have been included under Section 1: *Aims, learning outcomes and programme details*. Even here the contents of the courses offered at level IV for the Special Degree programme, were missing. These errors were pointed out at the first meeting the review team had with the Department. Having accepted these as genuine mistakes, the Department submitted a slightly revised Self-Evaluation Report. Since there was irrefutable evidence that such courses are offered by the department, we have accepted the revised report for our evaluation.

The courses offered are adequate and comprehensive to achieve the learning outcomes expected through these programmes. The credit values of 108 and 152 assigned to the General and Special Degree courses respectively, appear to be higher than the normally accepted values of 90 and 120 in other subjects. The explanation given to this anomaly was that the department often allocates a practical (Lab course)

unit of 45 hours duration a credit value of 2 instead of 1. Attempts would be made to correct this situation in the near future.

One of the weaknesses observed is the lack of a mechanism in the department for the regular review of the programmes offered. *Adhoc* discussions are held on the course contents as and when necessary and even revisions are done. The suggestion to make this a regular annual or bi-annual activity preferably with the participation of an outside subject expert was accepted by the department.

*The review team judges curriculum design, content and review of the subject of Botany as satisfactory.*

## **5.2 Teaching, Learning and Assessment Methods.**

The common method of imparting knowledge is through the delivery of lectures. The medium of instruction is English from the first year of the degree programme. Most of the lectures are conducted according to a carefully prepared format. The review team observed that the lecturers were successful in attracting the attention of almost all students in the class. The team appreciated the techniques of teaching adopted by the lecturers, e.g. interaction with students during the course of the lecture. *However, it was observed that in large classes some lecturers tend to focus their attention only to the students in the front rows at the expense of backbenchers.*

As indicated in the discussions held with members of the academic staff and students, it was revealed that the knowledge acquired in the classroom is supplemented by laboratory work, field trips and field surveys. Student response in submitting practical exercises and tutorials is at a satisfactory level. The review team also noted the prompt and careful marking of the student exercises and tutorials by the respective academic staff members.

The Overhead and the Multi media projectors appear to be the widely used teaching aids in the classroom. *However, it was noted that some lecturers tended to underutilize other teaching aids such as blackboards. Handouts are being utilized whenever necessary.*

Summarized lecture notes are deposited in the Faculty library by the respective teachers. This provides an opportunity for the students to come to the lectures pre-prepared and enable them to pay more attention to the teacher during the lecture without attempting copy down everything stated. While this can be considered as an improvement in the teaching method, such provision also encourages certain students to absent themselves from lectures. Absentism among general degree students has been noted to be on the increase. The main explanation for this is, that a number of students are attending private courses on accountancy, management etc, which enhances their employability and they do this at the expense of certain lecture times as attendance at lectures is not officially recorded.

The learning environment is fairly conducive. The department has a group of well qualified academics. The classrooms are generally equipped with blackboards, Multimedia projectors and Overhead projectors. The class rooms are well-ventilated, fitted with ceiling fans and the seating arrangements are also satisfactory. *It was the common view of the students, however, especially the general degree students, that their workload is excessively high. An attempt must be made to explore the possibilities to reduce the workload.*

The department has a small computer room with six computers for the use of students. Of them, three have internet facilities. One computer with internet connection has been reserved for the use of the members of the staff. Apart from the main library, which is well equipped with modern facilities, the faculty also has a small library for the use of staff and the students following special degree programmes. *However, it was observed that the use of journals by the students, (although the university library spends two thirds of its financial allocation on journals), is at a minimal level. At the same time, it was brought to the notice of the review team by the students that the number of copies of prescribed textbooks cited in the courses should be increased to enable them to do effective reference. They also pointed out that recent editions of the books are in short supply.*

The department adopts a variety of assessment methods. A continuous assessment method is being practiced through practical exercises, tutorials and assignments. The end semester examination which consists of structured and essay type questions is the main method of assessment of the theory component. The question papers reviewed by the team for different courses indicated that the standard of questions was at an appropriate level. In the preparation of end semester question papers and the correction of answer scripts, the services of internal second examiners are obtained. *However, answer scripts are not sent to external examiners due to the fact that results have to be released within a short period, before the next semester. The review team is of the view that it is desirable to have a mid-semester examination with a view to identifying and helping weaker students. It was also suggested that periodic external reviews of the assessments including the scrutiny of a few randomly selected answer scripts by an external examiner, could improve the assessment of student performance. Such external reviews need not be tied up to the release of examination results.*

*The review team finds that the teaching, learning and assessment methods of the department can be judged as **good**.*

### **5.3 Quality of Students, including Student Progress and Achievement**

All admissions to the University are handled by the University Grants Commission which considers the students' choices and other criteria in the selection process.

A disturbing trend regarding student enrolment became evident during the presentation made by the Department. Most of the students admitted to the Ruhuna University do not accept their admission and register themselves. For example from the 1<sup>st</sup> list of 149 students admitted in the 2002/03 batch, only 45 registered. From the 2<sup>nd</sup> list of 129 only 63 registered and from the 3<sup>rd</sup> list of 12, 09 registered. A worse scenario is seen with regard to the 2<sup>nd</sup> batch admitted in the same year 2000/03 with only 24 students registering out of the 174 admitted by the 1<sup>st</sup> list and 55 registering from the 2<sup>nd</sup> list of 132. The university had to finally accept students from a 3<sup>rd</sup> and a 4<sup>th</sup> list to obtain their quota of students. Even with such late admissions, the Faculty seldom fills all its vacancies.

This has serious repercussions as the quality of the students is not only low, but also diverse. To standardize their comprehension and teach such a group is certainly an arduous task. As this affects the entire Faculty, it should make a serious study to find out the underlying causes for this situation and adopt remedial measures. However it is consoling to note that the drop out rate of students is very low. This is perhaps a

reflection that the university provides a congenial environment for study and the social life of its students. A concerted effort should be made to publicize this aspect so that potential entrants do not shy away from the campus due to misconceptions and adverse publicity.

At the meeting the review team had with the students, it was revealed that out of the gathering of 62, only two students had gained entry on their 1<sup>st</sup> attempt at the G. C. E. Advanced Level examination. This is not unusual because most of the students vie for entry to Medical and Engineering degrees and accept Biosciences and Physical Sciences as their 2<sup>nd</sup> or 3<sup>rd</sup> choices. It should therefore be realized that Faculties of Science do not get the best quality students at admission.

However according to evidence presented by the Department, student progress and achievement is very good. Results of the English proficiency test at Level II show a pass rate of nearly 70% with 8% scoring over 70 marks. English proficiency among the students also became evident not only during the presentations they made, but more so during the discussions the review team had with them. We were quite impressed by the confidence with which some of the Level I students participated in the discussions expressing their views and ideas very well in English.

Results of the Special Degree in Botany during the past five years are also satisfactory with a 100% success rate. Their performance during the past two years is remarkable with all the candidates securing 1<sup>st</sup> Class and 2<sup>nd</sup> Class (Upper Division) honours in 2003 and last year all candidates securing either 2<sup>nd</sup> Class (Upper & Lower Division) honours. Also the success rate of General Degree candidates offering the subject of Botany is good with nearly 100% passes during the past five years and 50% securing A & B grades. It is encouraging to note that A grade passes have increased in 2004/05 in comparison to the previous years.

The team also had the opportunity to talk to a student who had graduated with a Special Degree in Botany securing 2<sup>nd</sup> Class honours (Upper Division). Currently he is following a Master's Degree Programme in Norway having won a competitive scholarship awarded by the European Economic Union. He spoke with a lot of self confidence and assessed the courses in Botany he followed at Ruhuna as well formulated and of a high standard. He had the impression that improvements can be brought about by introducing more practical classes in molecular biology and plant tissue culture. He loves the department and has made a special trip to Sri Lanka to face an interview as a candidate for a vacancy of a Lecturer in the Department.

All in all, this good record of success in student performance is a reflection of the devotion and commitment of the Department and its staff towards teaching and student well being.

*The review team therefore judges student progress and achievement as good.*

#### **5.4 The Extent and Use of Student Feedback, Qualitative and Quantitative**

The department has a method to obtain student feedback on its programmes from the General Degree students. A questionnaire with 18 questions, in Sinhala and English, is given to students at the end of each course unit. The reviewers had the opportunity to inspect the questionnaires and the responses received. A majority of students have expressed satisfaction (good) on the quality of the lectures in all aspects. The questionnaire has room for improvement and should be reviewed and revised periodically.

At present this questionnaire is distributed and collected by the same teacher who conducts and evaluates course performance. Whether the students therefore provide

their candid opinions is somewhat questionable. An improvement and authenticity of the responses may be achieved if the distribution and collection is entrusted to another person, preferably a non-academic staff member like the Senior Staff Technical Officer of the Department.

There was no evidence of any formal mechanism to obtain student feedback from Special Degree as well as 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.

Reviewers are of the opinion that it is very important to have a feedback from the postgraduate students following the M.Sc. course in Plant Protection. Being two years old the course is young and such feedback could be extremely useful to bring about improvements.

A very progressive and positive step towards student feedback is the open discussion of their performance at examinations conducted by the corresponding teachers. This not only wins the confidence of the students with respect to the fairness of the assessments, it also enables the students to identify their shortcomings and mistakes and improve their performance in the future.

Informal methods are also being used to obtain a feedback from the students. It was revealed that the demonstrators are being used as 'antennas' to get the views of the students, on the practical programmes.

Feedback obtained from the students has been discussed by the staff and steps have been taken to improve methods of teaching. These were revealed at the discussions the team had with the staff and confirmed by the observations made in the lectures monitored.

Reviewers were also informed that feedback from employers and prospective employers is regularly obtained by the department. However, documentary evidence is lacking to make any firm conclusions on this.

*It is the view of the review team that the extent and use of student feedback of the department can be judged as **good**.*

## **5.5 Postgraduate Studies**

The Department offers taught postgraduate degree courses as well as degree programs by research. Facilities for Postgraduate degrees by research and taught courses are up to the required standards and are well maintained. Most staff members of the Department are involved in teaching postgraduate courses and supervision of postgraduate research. The department has a good academic strength of two professors and seven senior academics with PhD qualifications, among the thirteen permanent allocated cadres. These members together with the visiting staff from the Faculty of Agriculture, are adequate and capable of effectively steering the postgraduate programmes.

An M Sc taught course in Crop Protection is in progress in collaboration with the Faculty of Agriculture, University of Ruhuna. This type of interfaculty collaboration with resource sharing is exemplary and caters for both Science and Agriculture stakeholders of the country. Such a course also produces graduates with diversified knowledge and skills that could meet a wider demand of employment. The course content is well balanced between basic and applied aspects, comprehensive and has a wide coverage on most of the areas within the scope of plant protection.

A total of 23 students, both from the first and second year programmes, are currently following this course.

The Review Team interacted with these students during a lecture conducted by a staff member from the Faculty of Agriculture. All the students are employed, mostly in the public sector, and had basic degrees in Agricultural Science from the Universities of Ruhuna and Peradeniya and General Science from Sabaragamuwa.

In general, all the students were satisfied with the ongoing programme. A few recommendations were however made by them to improve the programme.

These are to:

- Include more practical and field oriented courses.
- Introduce some teaching by invited members from the private sector that will enable an exposure to the culture of this sector which has a high potential for employment.

The Department is also planning to offer an M Sc course in Molecular Biology and Postgraduate Diploma courses in a number of disciplines in Botany depending on the existing demand. As these are fee levying courses they will impose a lesser burden on the departmental budget. Such plans to enhance postgraduate studies should be encouraged, but the resources both manpower and facilities should be available to ensure the quality and sustainability of such programmes.

*The reviewers having observed the present status of the postgraduate studies in the Department, judge this aspect as **satisfactory**.*

### **5.6 Peer Observation**

Reviewers were informed that some staff members have been subjected to peer observation in the department. Unfortunately, there was no documentary evidence to support this. At present, there is no formal procedure for peer observations either in the Department or the Faculty, but it is noteworthy that the staff members feel positively towards a peer review process, which they are planning to introduce.

At present the Department does not practice external second marking for undergraduate degree programmes. External examiners are used only for moderation of question papers, and internal second markings 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.

*Despite the absence of a formal peer review process, the reviewers found informal peer observations in the Botany programme and therefore rates this aspect as somewhat **satisfactory**.*

### **5.7 Skills Development**

As far as subject specific skills are concerned, the department has adopted various methods to improve the skills of their students. They have introduced new courses of study, especially as optional course units at third and fourth year levels, with a view to allowing students to enrich the composition of their degree.

Laboratory practical classes are the principal modes of knowledge based, skills development. These are supplemented by field classes and field trips to selected localities which enhance the applied knowledge of students and stimulate their interest in the working of Botany in natural environments.

*The practical class on Algal Diversity observed by the review team left much room for improvement. Neither the students, nor the Demonstrators had a clear idea of what the class was about. The hand outs provided did not carry a proper introduction communicating the objectives of the class. A few of the names of the algal specimens provided were spelt wrongly.*

Special degree students are being trained to conduct independent research studies that enhance their research capabilities. The research projects are well planned with pre-project preparatory seminars and experimental work appear to be conducted under close supervision. These students are also provided with IT facilities and access to internet connections. The team observed students making use of these facilities with enthusiasm not only to access information, but also to make their presentations more attractive and effective. The outcomes of all these efforts were evident from the high quality of the research reports the team had the opportunity to scrutinize.

A constraint for more field oriented skills development, particularly in environments and ecosystems not very familiar to Ruhuna, is the limited funds available for field visits. A special effort perhaps through the Botanical Society or the assistance of alumni and well wishers of the university could be sought to establish a fund for such activities.

A novel feature of the Special Degree programme that allows students to develop independent information gathering, interpretation and analysis of knowledge, their synthesis and presentation skills, is the seminar at which students make presentations on a topic of their choice. These topics are not related to the subject of Botany and this exercise presents an ideal opportunity for students to broaden their knowledge and outlook beyond the confines of a subject or even within science. The team was impressed by the two seminars it had the opportunity to witness. The confidence with which the presenters answered questions posed at the discussion bore evidence of their personal interest and commitment to the selected area of study.

As far as generic skills are concerned, students are provided with opportunities to gain skills in IT and English Language. Apart from the facilities provided by the department, the services of the Career Guidance Unit of the University are obtained to provide students with opportunities to gain skills in areas such as Leadership, Personality and Communication.

Student abilities in organizing academic work are displayed by the publication of the journal of the Botany Society.

*It is the view of the review team that the skills development of the department can be judged as **good**.*

## **5.8 Academic Guidance and Counseling.**

Academic guidance and counseling are mainly handled by the university and the faculty. Although the Department of Botany does not have an organized academic counseling system, members of the staff offer counseling to students in an informal way. At the same time, some members of the academic staff of the department serve as student counselors and Proctors and Deputy Proctors of the University of Ruhuna.

*The review team is of the view that it is advisable that the department makes arrangements to establish its own academic guidance and counselling system.*

This system should be responsible to help overcome weaknesses observed in students as they progress through the three levels of the subject in the general Degree programmes. It could also assist the students in selecting special degree courses and optional course units during their 3<sup>rd</sup> and 4<sup>th</sup> years of their Special Degrees, depending on their academic/career interests and aptitudes.

*As there is no system in the department for academic counseling and guidance, there is no choice but to judge this aspect as **unsatisfactory**.*

## 6. CONCLUSIONS

### • **Curriculum Design, Content and Review**

The original self evaluation report had to be amended as some of the information submitted was incomplete, particularly with respect to course contents of level IV special degree and postgraduate programmes.

The department has devoted a lot of time and effort to work out a curriculum that caters to the needs of the students and achieve its objective of producing graduates well equipped to apply their subject knowledge to practical situations. However, scientific progress as well as developmental and social needs also change rapidly. Therefore lack of a regular system for the review and revision of the teaching curricula is a weakness. Another short coming of assigning 2 credit values to certain lab classes of 45 hour duration has to be revised so that the total credit requirement for the degrees offered could fall into a more rational value.

This aspect has been judged as *satisfactory*.

### • **Teaching, Learning and Assessment Methods**

It is quite evident that the department is conducting a well balanced teaching programme with the active participation of a devoted team of teachers committed to the well being of its students. The university should encourage these efforts by the provision of two additional class rooms that could strengthen the effective delivery of lectures under the modular course unit system. Depositing summarized lecture notes in the library for student reference, while been helpful to students could encourage absentism. Some form of mid-semester evaluation could assist students to recognize their weaknesses and improve performance as they progress through the course. Students do not seem to use the reference journals for which a considerable amount of library funds appear to be spent. Instead, they prefer to have several copies of the recent editions of text books prescribed for the different courses offered. A system of periodic external evaluation of assessment of student performance would certainly bring about an improvement of the current situation.

This aspect has been judged as *good*.

### • **Quality of Students, including Student Progress and Achievement**

It is generally known that the Faculties of Science in all universities largely get students who have failed in their attempts to secure places in the Medical, Dental and Engineering Faculties. Unfortunately, the University of Ruhuna appear to have a further problem of not attracting quality students and this is evident from the large number of students admitted to Ruhuna by the UGC declining to register. Nonetheless the university should be proud to find that the graduates that they eventually produce are of a high quality. It is therefore incumbent upon the

university authorities to find out the root causes of this situation and adopt remedial measures to overcome this problem. It would also be useful for the department to initiate a mechanism to follow up the progress of their graduates with regard to their employment and career development.

This aspect has been judged as *good*.

- **The Extent and use of Student Feedback, Qualitative and Quantitative**

The Department should be commended for the bold step it has taken to introduce an effective student feedback system through a questionnaire. It is also noteworthy to find that examination assessments are also brought under scrutiny with the participation of students. These steps certainly improve staff-student relationships and trust. The reliability of the student responses can be improved by entrusting the implementation of the feedback questionnaire to a party other than the instructors. The department will certainly stand to gain if this system can be extended to special degree and postgraduate students.

This aspect has been judged as *good*.

- **Postgraduate Studies**

Evaluation of this aspect was limited to the single taught postgraduate course of M.Sc. in Plant protection. The novel approach of offering it in collaboration with another Faculty is a positive step. The conduct of this course, the level of the students and their quality appear to be satisfactory. The current batch of students preferred strengthening of practical and field courses that lead to their skills development. Every encouragement should be given to the plans of the department to expand postgraduate studies. However, it is critical that expansions are accompanied with necessary improvement of facilities of both manpower and infrastructure.

This aspect is judged as *satisfactory*.

- **Peer Observation**

It is encouraging to find that all staff members are very positive in their attitude for peer observation. In fact some form of internal peer assessment appears to be taking place, though as an adhoc arrangement. It would therefore be easy and certainly desirable to introduce peer observation in a regular, more organized manner. If the number of senior staff is a limitation for effective implementation, perhaps initiating it on a Faculty basis could be attempted.

Thought not regularized, peer observation of junior staff by their senior colleagues is judged as *satisfactory*.

- **Skills Development**

This aspect of tertiary education has now gained more importance than ever before. For one thing gathering information and access to subject knowledge is easier than earlier due to the availability and familiarity with Communication Information Technology. Unfortunately, school education has largely neglected skills development through practical classes because it has been taken off from the A-level examination. However, prospective employers are today looking for graduates with skills than academic knowledge. It is therefore very important to pay special attention to practical classes, field work, assignments and such activities which not only improves skills but also build up self confidence. It may

therefore be worthwhile to review and revise curricula whereby skills development be afforded more emphasis than loading students with subject knowledge.

Steps currently in operation in the department for skills development is judged as **good**.

- **Academic Guidance and Counseling**

Most universities are weak on this aspect and it was no surprise to find that the department did not have a system for this. This however is an extremely important aspect particularly in view of the poor quality students gaining admission to Ruhuna. Such students need a lot of guidance and help in choosing the diverse subject combinations and Special Degree courses offered by the Department. A well established system of guidance and counseling at the department will hopefully move away the students seeking such assistance from their seniors in the so called *Kuppi Classes* where incorrect and misleading information is often doled out.

In the absence of any system for academic guidance and counseling, this aspect is judged as **unsatisfactory**.

<b>Aspect reviewed</b>	<b>Judgement</b>
Curriculum design, content and review	Satisfactory
Teaching learning and assessment methods	Good
Quality of students including student progress and achievements	Good
Extent and use of student feedback, qualitative and quantitative	Good
Postgraduate studies	Satisfactory
Peer observations	Satisfactory
Skills development	Good
Academic guidance and counselling	Unsatisfactory
<b>The Overall Judgement</b>	<b>Suspended</b>