SUBJECT REVIEW REPORT

DEPARTMENT OF PHYSICS

FACULTY OF APPLIED SCIENCES

UNIVERSITY OF SRI JAYEWARDENEPURA

24th to 26th March 2010

Review Team :

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CONTENTS

1. SUBJECT REVIEW PROCESS

Subject review process formulated by the University Grants Commission evaluates quality of education within a specific subject or discipline. Basically it is focused on the quality of the teaching, learning process, and on student achievements. It has been designed to evaluate the quality of both undergraduate and postgraduate programmes offered by academic departments of the Sri Lankan Universities.

This report describes the outcome of a review carried out to evaluate the quality of the academic programmes, teaching-learning process and other related issues in the Department of Physics (DP) of the Faculty of Applied Sciences of the University of Sri Jayewardanepura. In this exercise the following aspects were examined and evaluated.

1. Curriculum Design, Content and Review
2. Teaching, Learning and Assessment Methods
3. Quality of Students, Student Progress and Achievements
4. The Extent and Use of Student Feedback
5. Postgraduate Studies
6. Peer Observations
7. Skills Development
8. Academic guidance and counselling

2. BRIEF HISTORY OF THE UNIVERSITY, FACULTY AND DEPARTMENT

Introduction

The University of Sri Jayewardenepura was first established by an Act of Parliament on 1 January 1959 as the Vidyodaya University of Ceylon as the successor to the Vidyodaya Perivena. In 1972 the Vidyodaya University became a campus of the University of Sri Lanka under the University of Ceylon Act No. 1 of 1972 and again became an independent university under the Universities Act No. 16 of 1978 with the name and style University of Sri Jayewardenepura. Today after fifty years of its establishment, the University of Sri Jayewardenepura is a fully developed institution with five faculties, namely Applied Sciences, Arts, Graduate Studies, Management Studies and Commerce, and Medical Sciences with a student population exceeding ten thousand.

The mission of the university

The mission of the University of Sri Jayewardenepura, founded upon the tenet ***vijja uppatatam settha*** *('among all that rise knowledge is the greatest')* is to excel as an institution of higher learning.

The University is committed to the pursuit and transmission of knowledge through teaching, scholarship and research and active service to the community in an environment which values creativity, freedom of intellectual thought and expression, equal opportunity, fairness and professional growth. The University's endeavour is to contribute to national development by providing a balanced education which blends the finest in theory and practice and by forging interactions between the University and the wider polity.

Faculty of Applied Sciences

The Faculty of Applied Sciences of the university was established in 1962. It consists of eight academic Departments covering the disciplines of Botany, Chemistry, Food Science, Forestry and Environmental Science, Mathematics, Physics, Statistics and Computer Science, and Zoology with academic staff strength nearly 100. The current undergraduate student population is over 1000 while the strength of the postgraduate students stands close to 100. The faculty conducts B.Sc. (General) and B.Sc. (Special) Degree programmes under the physical sciences stream and the biological sciences stream. B.Sc. (General) Degree programme is of three year duration while the B.Sc. (Special) Degree programme is of four year duration. Students are selected for the B.Sc. (Special) Degree programme at the end of the second year based on the performance of course unit examinations of the first two years of the relevant subject**.**

The faculty operates on the modularised credit valued semester based course unit system having 1 credit equivalent to 15 hours of lectures or 45 hours of laboratory work.

Department of Physics

The DP has a long history that runs back to more than four decades. The Department is among the largest, in view of the number of students within the Faculty of Applied Sciences. Falling in line with the mission of the University, DP strives to provide a high quality learning experience to the students through a series of course units which cover both traditional fundamental aspects of Physics as well as more exciting recent developments of Physics.

There is one Senior Professor, eight Senior Lectures and three Probationary Lecturers in the Department. One of the Probationary Lecturers is undergoing postgraduate training. There are 13 Temporary Demonstrators in the Department (2 from the Deans office cadre). Department also has 6 Technical Officers, 1 clerk, 4 Laboratory Attendants, and 2 Labourers.

The Department is housed in two buildings within the Faculty of Applied Sciences. All Physics lectures are conducted in four lecture halls in these two buildings. The *Physics Lecture Theatre* which can accommodate about 180 students is the largest lecture hall. There are two other lecture halls that can accommodate about 75 students each and a smaller lecture hall with a capacity of about 50 students. Five laboratories are available for practical work. The DP also has a mechanical workshop manned by a talented technical officer.

Existing IT facilities in the DP include about 30 PCs (which range from old 486 machines to new dual core machines), three laser printers, an ink jet printer, a dot-matrix printer, and a scanner. Most of these facilities are made available to students. Both buildings of the DP are connected to the campus-wide network through a 100 Mbps fibre-optic network. Internet access is available to both students and staff through the campus-wide network which is connected to the Internet via two leased lines – one 64 kbps link from SLT and one 2 Mbps line from LEARN. For enhancing the traditional “chalk and talk” type teaching, a multimedia projector and an overhead projector are available at the DP.

Library facilities for staff and students are mainly available through the central library of the university. This library owns a collection of about 1800 Physics books, about 1900 Mathematics books and about 550 Computer Science books. In addition, a good collection of books in related areas such as Engineering are available. In the past, the library subscribed to

a range of Physics related magazines such as Physics Today, Scientific American and to research journals such as American Journal of Physics and Physical Review Letters. At present, however, some of these journals have been discontinued due to financial constraints.

In addition to the facilities at the central library, a small collection of books, mostly those donated by former members of the staff, is maintained at the DP.

DP offers Physics as a subject for several combinations in both physical and biological sciences streams.

Under the physical sciences stream, students can offer Physics as a subject in following combinations:

Physics - Mathematics - Chemistry
Physics - Mathematics - Statistics
Physics - Mathematics - Management Science
Physics - Mathematics - Computer Science
Physics - Chemistry - Polymer Science and Technology

Physics is available for biological sciences stream students under following combinations:

Physics - Chemistry - Zoology
Physics - Chemistry - Polymer Science and Technology

At the end of the second year, students are selected for the B.Sc. (Special) Degree programme in Physics, based on their performance in all the course units completed in the Faculty. Normally, about 10-11 students who have obtained the highest Grade Point Averages (GPA) out of all applicants are selected to follow the B.Sc. (Special) Degree programme for two additional years.

Undergraduate Courses (*Extracted from the SJP website*)

B.Sc. (General) Degree (3 years)
The B.Sc. (General) Degree is designed for the students who aim for a career in the industry, education sector, administrative and management services etc. This degree programme offers theoretical as well as applied courses in Physics. Students will acquire valuable analytical and concept developing skills that will groom them to take on the challenges of the modern society.

B.Sc. (Special) Degree (4 years)
B.Sc. (Special) Degree is aimed at the students who are interested in taking Physics as a career and would like to pursue an academic/research line in the future. This 4 year degree programme is commensurate with any other B.Sc. (Special) Degree programmes offered in Sri Lanka. The students are taught core and applied courses in Physics.

Salient Features of the undergraduate programme
Several new applied course units have been introduced to suit the current socio-economic trend of the country while retaining rigor and beauty of the pure aspects of Physics. These course units include:

Geophysics
Computational Physics
Analogue and Digital Electronics
Computer Hardware
Introduction to Microprocessor and Computer Interfacing
Industrial Physics

Students are encouraged to involve in projects and seminar presentations. Further, the Industrial placement scheme of the Department exposes the students to the industrial and scientific environment of the country which helps them to appreciate practical applications of Physics.

In addition to the B.Sc. (General) and B.Sc. (Special) Degree programmes, the DP conducts a postgraduate Diploma and a M.Sc. programme in Physics Education.

The DP also collaborates with the Faculty of Medicine by conducting Physics course units to students following the degree programme in Medical Laboratory Science offered by the Faculty of Medicine. Department also conducts Physics courses to students who follow the Food Science and Technology degree programme offered by the Faculty of Applied Sciences.

3. AIMS AND LEARNING OUTCOMES

3.1 Aims

B.Sc. (General) Degree

Aims of the B.Sc. (General) Degree programme are to:

- Produce scientifically aware citizens knowledgeable in the principles of Physics which are applicable throughout their lives.
- Develop analytical ability, critical thinking and independent learning capabilities of students.
- Equip students with transferable skills related to problem solving and practical techniques.
- Improve communication skills.
- Impart knowledge in Information Technology.
- Prepare students for research, for further training in Physics and related subjects or for employment in a wide variety of occupations.
- To illustrate diverse applicability of Physics.

B.Sc. (Special) Degree

Aims of the B.Sc. (Special) Degree programme are to:

- Prepare students for research, for further training in Physics and related subjects or for employment in a wide variety of occupations.
- Provide a training required for careers in fields where applications of Physics are important.
- Enhance the desire to understand the physical principles governing the universe by instilling an appreciation of the beauty of Physics.
- Provide a wider exposure to advanced topics in Physics and a broader working knowledge of research techniques.

3.2. Learning Outcomes

B.Sc. (General) Degree

On completion of the B.Sc. (General) Degree with Physics as a subject, the students should have:

- Achieved a good understanding of the basic principles of Physics.
- Achieved an understanding of the way the scientific method is used for advancing knowledge.
- Acquired competence in generic laboratory skills.
- Developed transferable skills such as analytical and problem-solving skills, oral and written communication skills and the use of information technology.
- Developed skills in numerical problem-solving and laboratory report writing.
- Acquired an understanding of theoretical and practical aspects of applied areas such as Electronics, Geophysics and Computational Physics.

B.Sc. (Special) Degree

In addition to the learning outcomes of the B.Sc. (General) Degree programme, those who follow the B.Sc. (Special) Degree programme should have:

- Acquired an advanced practical and/or computing skill.
- Acquired ability to carry out research work under supervision and to acquire basic level research skills in experimental, theoretical or Computational Physics.
- Acquire abilities to use IT for communication, experimental control and mathematical analysis which will be useful in a wide range of occupations.
- Ability to explain the physical principles underlying modern technology with emphasis on IT and Electronics.

4. FINDINGS OF THE REVIEW TEAM

4.1. Curriculum Design, Content and Review

Curriculum Design

The curriculum offered by the DP, University of Sri Jayewardenepura for the B.Sc. (General) and B.Sc. (Special) Degree programmes are of adequate academic standard and enables the students to achieve the intended learning outcomes proposed in the approved course structure of the DP. The syllabus covers adequate subject matter in many areas of Physics with relatively more emphasis on Electronics. It may be the reflection of the applied nature of the course structure. The Physics component of the B.Sc. (General) Degree Programme

comprises seventeen course units having total credit value of thirty. The B.Sc. (Special) Degree curriculum comprises seven course units of total credit value twenty in the third year and ten course units of total credit value thirty credits in the fourth year, in addition to all the B.Sc. (General) Degree course units.

Content

The curriculum content of the courses offered by the DP is of sufficient breadth and depth in terms of subject coverage. It is noted that the curriculum content helps to provide knowledge on topics of current interest such as Computational Physics, Space Physics, Environmental Physics, Microprocessor, Computer Interfacing etc. The laboratory programmes also provide sufficient opportunities for students to acquire a better and deeper understanding of basic concepts in Physics and to develop necessary skills to meet the need of the industries and world of work. However, the review team is of the opinion that the DP should also give more emphasis to topics like Solid state Physics, Particle Physics, Astrophysics etc. It is advisable to include magnetic properties of solids in Solid State Physics course and interactions of particles in Particle Physics course, and also increase the number of experiment for the B.Sc. (Special) Degree programme.

Review

The review team noted that the last major revision of the curriculum had taken place long ago just after the introduction of the course unit system. However, it was said that from time to time new course units were introduced and syllabuses revised to meet current needs and developments. However, the review team was unable to find any documental evidence for the approval of new course units by the Faculty Board of Faculty of Applied Sciences and the Senate of the University. The review team strongly feels that it is time to revise the syllabuses with feedback from all types of stakeholders.

Considering strengths and weaknesses in the Curriculum Design, Content and Review, the reviewers grade this aspect of the study programme as GOOD.

4.2. Teaching, Learning and Assessment Methods

Teaching Learning

The teaching and learning strategies of the Department consist of conventional teaching methods such as class room lectures imparting subject-specific knowledge, literature surveys followed by presentations. This is further supplemented by references on prescribed books as well as computer-assisted teaching-learning methods and literature surveys followed by presentations which are aimed at developing independent study and transferable skills among students.

Most of the core courses have associated practical lessons to assist the students in understanding the basic concepts and to provide them with the opportunity to apply their theoretical knowledge into practice. The practical classes in Physical Optics, Analogue and Digital Electronics, Computational Physics and Modern Physics are some of the examples.

The lectures are supplemented by tutorial classes normally conducted by junior staff members. These are basically discussion classes promoting student-centred learning. However, since most of the tutorials are graded by temporary staff members, tutorial grades are not considered when evaluating the final course grades. Reviewers agree that, due to the increase in the student intake, it is not possible for the senior staff to grade tutorials.

Assessment Methods

Various assessment methods are being employed to evaluate students' performance. Most of the courses are evaluated at the end of the semester through a written examination. In some units where the tutorials are marked by a senior staff member, a specified contribution is taken from the tutorial grades in determining the final grade in addition to the end of semester theory paper. Also in some course units the students are asked to study a course related topic and present a written report or an oral presentation which contributes a certain percentage to the final grade. The Seminar presented by the final year students is assessed by the senior academic staff of the DP led by the Senior Professor of Physics assisted by senior members of the academic staff based on their oral presentation at the end of the final year. This carries 75% of the total mark, and rest of the contribution (25%) comes from the lecturer who assigned the topic, based on the preparation made by the student throughout the year.

However, it is noted that the most courses are evaluated only at the end of the semester through written examinations in a similar manner as in the old annual examination system. The reviewers feel that this is not satisfactory and steps should be taken to evaluate students by conducting mid semester examinations, quizzes, etc. This is because the students cannot gauge their performance against the standards expected from them and teachers cannot judge the level of instruction before the semester end examination. In addition, the lecturers do not receive a subjective assessment of the students' capabilities before the end of the course, hence rectifications cannot be applied. As such mid-term evaluations provide a feedback to students as well as lecturers to improve their learning and teaching process. It is also noted that there is no moderation of the end semester question papers and there is no second marking of the answer scripts. As this is the situation the reviewers encourage the DP to consider the above suggestions favourably.

All practical examinations are conducted at the end of the academic year. First year students sit for a 3 hour practical examination. Second year students have three components in their practical examination; 1 hr 30 minutes examination on their Basic Electronics knowledge and 1 hr 30 minutes examination on their laboratory experience in Optics, and continuous assessments on their ability to handle Computational Physics problems. In addition to the final practical examination, the Optics assessment has a 20% contribution towards the final grade based on their laboratory reports submitted on time. Third year practical examination consists of a 3 hour practical examination, a 1 hour written examination and continuous assessments based on the students' performance in the laboratory and laboratory reports.

It is also noted that there is no practical examinations for the B.Sc. (Special) Degree programme students to evaluate the special component of the practical. It is evaluated by continues assessment. It was further noted that the evaluation of practical records are done only at the end of the academic year. This is not satisfactory as students do not have an opportunity to learn from their mistakes. Practical records should be corrected soon after the submission of the report. It would be better if a short viva is held after each practical or a practical examination is held at the end of the practical course to assess the overall laboratory skills gained by the B.Sc. (Special) Degree programme students.

All examination papers are initially marked by the lecturer in charge of the course unit according to a marking scheme, and secondly, another senior staff member goes through to check for any omissions in marking and summation errors.

Project reports are marked by the lecturer who supervises the project. About 50% of the total mark is assigned for the work done by the students throughout the year and attendance to the weekly meetings with the supervisor.

The reviewers feel that the assessment of the research project should include an oral presentation by the student and the student should be assessed by a panel of academic staff members. It would be better to evaluate the project report by a senior academic, and the supervisor's contribution to the final mark is limited to 25% o. In any case, it is recommended that more weightage should be given to the oral presentation evaluated by several members of the academic staff.

In assessing the achievements of the internship, the confidential student evaluation form sent from the institutes where student undergoes training as well as the report prepared by the student which is evaluated by the academic staff members, and the student's performance at a viva voce examination of about 15 minutes duration are taken into account.

The reviewers are happy to note the inclusion of the industrial training into the B.Sc. (Special) Degree programme curriculum, which is an important module that builds up students' confidence in self-learning, provides an opportunity to put theory into practice, and develops the management cum leadership qualities. This would also provide an opportunity of establishing contacts with the professionals of their relevant fields.

Based on the above observations reviewers are of the opinion that Teaching, Learning and Assessment Methods in the DP is GOOD.

4.3 Quality of Students including Student Progress and Achievements

Quality of Students

The Faculty of Applied Sciences of the University of Sri Jayewardenepura receives students on the basis of their achievements at the G.C.E. (A/L) Examination through the University Grants Commission. Due to the attraction and the high demand for the professional degree programmes such as Engineering and Medicine, usually students who secure relatively low Z-scores at the G.C.E. (A/L) Examination are entered for Applied Sciences and Science Faculties of the Sri Lankan Universities. According to the information provided in the self evaluation report, quality of the students entered to the University of Sri Jayewardenepura for the past three years had been distributed over a wide range of Z-scores but centred in the range around 1·00-1·60.

Meetings were held with several groups of undergraduate students who offer Physics as a subject covering all the years by the Review Team. It was revealed from those meetings that they were in a position to follow the academic programmes most of which are conducted in the English medium by the DP. It has also been observed that the majority of students were having good interpersonal, communication and leadership skills, and clear future goals.

Student Progress

Students' progress very much depends on the extent of their participation in the academic programmes. It was noted that although the attendance is greater than 80% at first year lectures and all practical classes, the attendance at lectures of second year (<60%) and third year (<50%) are generally poor. The DP should come up with mechanisms to improve the second and third year lecture attendance too. However, according to the information provided

in the self evaluation report by the DP for the last four years, there has been a progress in the students' performance at Physics course unit examinations except for a few course units in one batch.

Students are selected to follow the B.Sc. (Special) Degree programme in Physics based on their performance in the first and second year examinations who secured highest GPA for the subject of Physics. According to the information provided in the self evaluation report, there were no dropouts in the B.Sc. (Special) Degree Programme and the pass rate was 100% for last few years. The achievement levels at the final examination are distributed from first classes to passes which indicates the validity and fairness of the evaluation process.

Student Achievements

The DP has not carried out any formal surveys to determine the job profile of the B.Sc. (General) Degree graduates who passed out recently, but according to the informal information they are currently employed as Administrators, Bank Officers, Management Trainees and Teachers both in government and private institutes. However, almost all the B.Sc. (Special) Degree graduates are employed, and some of them are pursuing higher studies in the USA, Sweden and Sri Lanka, while others are employed as University Academics, Executive Officers, Researchers and A/L Teachers.

Considering the overall performance of this aspect, reviewers judge it as GOOD.

4.4. Extent and use of Student Feedback

The quality of teaching and learning is monitored by the feedback from the students obtained through the questionnaire given to the students. Departmental records revealed that the most of the lecturers in the DP seem to be practicing this regularly. Although there were no records to show that any quantitative analysis had been performed on the data, qualitative information gathered from the questionnaires has been used to improve the teaching process.

Reviewers are glad to note that the Department has realized the importance of formally obtaining the feedback from the students. It was also noted that the views of students regarding the course units were obtained through informal discussions with students and through recently passed out students who had been employed as temporary demonstrators having closed contact with the students. It would be advisable to evaluate course units and their contents too through student Feedback.

Reviewers feel that the DP deserves a GOOD grade for the Student Feedback aspect.

4.5. Postgraduate Studies

The Department has a strong research programme conducted under the leadership of the Senior Professor of Physics, D. A. Thantrigoda. This has already resulted in several Ph.D. and M.Phil. Degrees. Some of the degree holders in fact serve as permanent members of the DP itself. Currently a substantial number of postgraduates are engaged in research activities under his supervision. However, the reviewers feel that had he obtained adequate support from his colleagues he could have upgraded the Department to a centre of excellence in Geophysics research in the region. In addition, two members of the senior academic staff are currently involved in postgraduate research locally.

The DP also has an ongoing postgraduate programme that offers Diploma/M.Sc. in Physics Education. Students can obtain a diploma after following the courses for one year and passing the examination at the end of the year. To be awarded the M.Sc. degree, the students have to follow courses in the second year and pass the end of year examinations in addition to completing a project based on Physics Education. The first batch of students was enrolled in the programme in 2007/2008, and more than 50 percent have completed the M.Sc. degree within the stipulated period. Reviewers believe that this is a remarkable achievement, and the efforts made by the coordinator and the rest of the academic staff involved are commendable. Reviewers strongly feel that the DP has sufficient manpower and other resources to embark on more postgraduate programmes.

Reviewers believe that DP has made a good progress with regard to Postgraduate Studies. As such reviewers grade this aspect as GOOD.

4.6 Peer Observation

DP firmly believes that peer observation could play a substantial role in enhancing the staff performance, and therefore formal peer observation process with an evaluation form has been in practice since 2006. As per the materials provided to the review team, some permanent staff members have been subjected to peer observation while teaching, by other members of their own department as well as from the Department of Mathematics. The team also noted that the Senior Professor of Physics is also being peer evaluated. However, according to the self evaluation report and the information received from the DP, most of the staff members had been peer-evaluated by the Senior Professor of Physics, the Head of the Department and the senior members of the staff in an informal manner, and the necessary information was communicated to relevant members as necessary. In addition, the academic performance of temporary staff members is being monitored by senior academics.

It can be recommended that the peer observation reports and the student feedback reports of the same lecturer can be correlated for further improving of teaching, learning and assessment of lecturers concerned. The review team also noted that the DP engages peers for moderation of question papers. Reviewers, however, observed that the evaluation of question papers and answer scripts was done only internally. It should be noted that all the universities can be mutually benefited through academic interactions; as such reviewers recommend that the moderation of question papers and marked scripts by peers from other universities should be commenced as a good practice.

Considering the overall performance of the DP in this aspect, the reviewers are of the opinion that it can be considered GOOD.

4.7. Skills Development

Skills development is an important aspect of any teaching-learning programme. Knowledge gain through teaching-learning activities cannot be applied meaningfully unless a person is competent with the required skills. In learning Physics, it is expected that skills such as analytical and problem-solving skills, oral and written communication skills and the know-how related to information and other modern technologies will be acquired. Physics related skills such as laboratory techniques, application of principles of Physics for problem solving, computer aided data acquisition, and analysis are expected to be useful for those who find employment in teaching and research or in industry where Physics is directly applied.

Some skills of multidisciplinary nature, such as the use of workshop machinery and tools, electronics, microprocessor programming, computer programming and basic IT skills are stressed because such skills help students to implement their theory knowledge to solve real world problems efficiently and effectively, and also to find employment. Further, transferable skills such as written and oral presentations, problem solving capability help all students acquire lifelong competencies irrespective of where they find employment.

Reviewers have noted that the DP has clearly understood this important aspect and taken several steps to fulfil this requirement. It has strengthen the teaching of modern and IT technology area through the introduction of several Electronics and Computational Physics modules, and the analytical thinking and problem solving capabilities through the implementation of student research projects and industrial training programmes.

In view of the above activities, Skills Development aspect has been graded GOOD.

4.8 Academic Guidance and Counseling

Generally academic guidance is given to all the students during the orientation programme. The students' handbook also provides information on academic matters. It was said that throughout their undergraduate career, students are guided in academic matters related to the Physics courses by the staff of the DP. Further, to guide the Physics students in academic matters two academic members of the DP are appointed as course advisors by the Faculty. In addition to the above arrangement there are four student counsellors appointed by the university to provide student counselling services. It was reported by the student counsellors that Medical counselling is also available in the university to students who suffer from mental stresses. The Career Guidance Centre of the university provides services of high standard to students. The centre conducts many programmes for personality development and to enhance the employability of students. It appears that students are queuing at the centre to get full benefit. There is a Cultural Centre in the university which organises cultural programmes to make student life in the university happy, and to improve social harmony among different groups of students. Its services are also commendable.

The review team grade this aspect of the study programme as GOOD.

Based on the observations made during the visit by the review team and discussed above, the eight aspects were judged as follows.

Aspect Reviewed	**Judgment**
Curriculum Design, Content and Review	Good
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	Good
Peer Observation	Good
Skills Development	Good
Academic Guidance and Counseling	Good

5. CONCLUSIONS

1. Curriculum Design, Content and Review

Strengths/Good practices:

- Department has implemented a standard curriculum covering all the major areas of Physics
- Existence of curriculum Development and Evaluation Committee
- Implementation of a standard Electronics course units for undergraduates
- Availability of Physics as a subject for the biological sciences students for their B.Sc. Degree programmes

Weaknesses:

- Lack of regular revision of curriculum
- Laboratory exercises are mostly 'Electronics' biased
- Number of experiments available in the B.Sc. (Special) Degree programme is low
- No evidence for consulting important stakeholders such as employers and alumni in the curriculum revision process

2. Teaching, Learning and Assessment Methods

Strengths/Good practices:

- Availability of qualified academic staff
- Availability of computer laboratories
- Availability of a spacious library

Weaknesses:

- No mid-term examinations
- No external moderation or evaluation of question papers and answer scripts
- No proper assessment method for practical course unit of B.Sc. (Special) Degree programme.

3. Quality of Students, including Student Progress and Achievement

Strengths/Good practices:

- Good passing rate in both theory and practical Physics course units
- Good passing rate in B.Sc. (Special) Degree programme in Physics
- Mechanisms are in place to provide various skills to the students

Weaknesses:

- Poor attendance in second and third year lectures
- Lack of data on the B.Sc. (General) Degree graduates profile

4. Extent and Use of Student Feedback

Strengths/Good practices:

- Implementation of questionnaires to measure feedback

Weaknesses:

- No feedback from students for course evaluation

5. Postgraduate Studies

Strengths/Good practices:

- Strong postgraduate research programme in Geophysics
- Implementation of an M.Sc. in Physics Education

Weaknesses:

- Lack of participation of academic staff in research
- Lack of subject oriented postgraduate programmes

6. Peer Observation

Strengths/Good Practices:

- Availability of a formal mechanism for peer observation of teaching
- Practising the peer observation at least for some permanent staff members
- Informal peer observation for most of the staff members
- Informal peer observation for temporary staff members

Weaknesses

- Lack of regular mechanism for peer observation of all academic staff members
- Peer observation by Temporary Lecturers and Demonstrators
- Lack of moderation and second marking by external examiners

7. Skills Development

Strengths/Good practices:

- Availability of Electronics and Computational Physics courses
- Research projects and Industrial training for B.Sc. (Special) Degree programme students
- Availability of Electronics practical courses for undergraduates

Weaknesses:

- Non-availability of internship training for B.Sc. (General) Degree programme undergraduates
- Lack of sufficient computer laboratory facilities
- Not having oral presentation for the research project
- Lack of experiments to cover all branches of physics to develop diverse laboratory skills

8. Academic Guidance and Counseling

Strengths/Good practices:

- Active counselling service
- Availability of a Career Guidance Unit for students'

Weaknesses:

- Non-availability of strong student academic advisory service

6. RECOMMENDATIONS

- Review of curricula should be done on the regular basis.
- More copies of important reference books should be made available at the library
- Fund allocations for purchasing laboratory equipment are grossly inadequate, and more realistic mechanism should be adopted in distributing funds among faculties and departments. Special consideration should be given to departments which need laboratory equipment.
- Computer facilities available for students are generally poor, and steps must be taken to enhance computer facilities. Productivity of the academic staff can also be enhanced by providing them with computers.
- Consider introducing more in-class assessments specially in the second and third years in addition to semester end examinations
- Introduce external moderation and evaluation of answer scripts
- Introduce more Physics experiments to the B.Sc. (General) Degree programme
- Introduce more experiments to the B.Sc. (Special) Degree programme
- Introduce presentations/viva to the practical components
- Extend peer observation to all academic staff on more regular basis
- Academic staff should be encouraged to engage in research
- Introduce more postgraduate programmes

7. ANNEXURES

Agenda for the Subject Review Visit
Department of Physics, University of Sri Jayewardenepura

Day 1

08.00-08.30 Meeting of Review Panel with QAA Council Representatives
(VC's Office-Reception room)

08.30-09.00 Meeting with the Vice Chancellor/USJ ***(VC's Office)***

09.00-09.30 Meeting with the Dean/Faculty of Applied Sciences ***(Faculty Office)***

09.30-10.00 Departmental Presentation on the Self Evaluation Report ***(P1 Lecture Hall)***

10.00-10.30 Discussion on the Self Evaluation Report ***(P1 Lecture Hall)***

10.30-11.00 Reviewing Agenda (Working Tea) ***(Reading Room)***

11.00-12.00 Observing 2nd Year Practicals (Optics and Computational Physics) and Facilities of the Department (Computer Room, Workshop etc.)

12.00-13.00 Lunch ***(Reading Room)***

13.00-14.00 Meeting with Special Degree Students ***(P4 Lecture Hall)***

14.00-14.30 Observing 1st Year and 3rd Year Practicals ***(Computer Room Block B)***

14.30-15.00 Meeting with Students from the Bio Science Stream ***(P1 Lecture Hall)*** (reading Physics as a subject)

15.00-15.15 Observing 2nd Year Electronics Practicals

15.15-15.30 Tea ***(Reading Room)***

15.30-16.00 Meeting with Undergraduate Students ***(P1 Lecture Hall)***

16.00-16.20 Meeting with members of Physics Society ***(Reading Room)***

16.20-17.15 Meeting with Academic Staff ***(Computer Room Block B)***

Day 2

09.00-10.30 Visit to Library (Meeting with Librarian and Senior Asst. Librarian / Science), Career Guidance Unit (Meeting with Career Guidance Advisor) and Cultural Centre (Meeting with Cultural Officer)

10.15-10.30 Observing 2nd Year Lecture ***(P1 Lecture Hall)***

10.30-11.00 Tea ***(Reading Room)***

11.00-12.00 Observing Documents ***(Reading Room & Elect. Lab)***

12.00-13.00 Lunch ***(Reading Room)***

13.00-13.30 Observing 1st Year Lecture ***(P1 Lecture Hall)***

13.30-14.00 Meeting with Demonstrators ***(Computer Room Block B)***

14.00-14.30 Meeting with Nonacademic Staff ***(Computer Room Block B)***

14.30-15.00 Meeting with Post-Graduate Research Students ***(Geophysics Research Room)***

15.00-15.30 Tea ***(Reading Room)***

15.30-16.00 Meeting with Physics Education M.Sc. Students ***(P4 Lecture Hall)***

16.00-16.30 Meeting of Reviewers ***(Reading Room)***

Day 3

09.00-09.30 Meeting with Student Counselors and Deputy Proctor ***(Computer Room Block B)***

09.30-10.15 2nd Year Student's Presentation on "Science Policy of Sri Lanka" ***(P1 Lecture Hall)*** (Seminar Course – General Degree)

10.15-10.30 Observing 4th Year Lecture ***(P4 Lecture Hall)***

10.30-11.00 Reviewers' Discussion (Working Tea) ***(Reading Room)***

11.00-12.00 Meeting with Head and Staff for Reporting ***(Computer Room Block B)***

12.00-13.00 Lunch ***(Reading Room)***

13.00-16.00 Report Writing ***(Reading Room)***