SUBJECT REVIEW REPORT

DEPARTMENT OF CHEMISTRY

FACULTY OF SCIENCE

EASTERN UNIVERSITY OF SRI LANKA

24th to 26th November 2008

Review Team :

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Dr. K. K. D. S. Ranaweera, University of Sri Jayewardenepura

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1. SUBJECT REVIEW PROCESS

A key factor required to promote and safeguard public confidence in Sri Lankan higher education is accountability for quality and standards. As higher education is a public good, universities must conscientiously exercise their responsibility for quality and standards. The subject review is one of the components of the external quality assurance programme carried out in Sri Lankan universities. It evaluates the quality of education within a specific discipline. It is focused on evaluating the student learning experience, student achievement and the teaching and learning process at the subject level.

Key features of the subject review process include the critical analysis of the self evaluation report (SER) prepared by the academic department concerned, peer observation of teaching, observation of documents, observation of the facilities available, and gathering information on activities towards quality assurance through conducting discussions with stakeholders to evaluate how the teaching-learning process helps in the achievement of intended learning outcomes.

Peer observation carried out during the review process includes observing teaching both in the theory and laboratory classes, and if possible in the field classes. The documents that are observed include, examples of student work, student handbooks, student handouts, lesson guides, statistics on student achievements and progress, samples of answer scripts, external examiners reports, peer evaluation reports, student evaluation reports, minutes of Departmental committees etc. The stakeholders with whom the discussions are carried out include the Head of the department, members of the academic and non-academic staff, undergraduate students, postgraduate students, alumni, academic administrators, and student counsellors.

The subject review is carried out to evaluate the success of the processes employed to achieve the aims and intended learning outcomes stipulated in the self evaluation report.

In the subject review process, the following eight aspects are evaluated.

Curriculum design, content and review
Teaching, learning and assessment methods
Quality of students including student progress and achievements
Extent and use of student feedback, qualitative and quantitative
Postgraduate studies
Peer observation
Skills development
Academic guidance and counselling

The review team consisted of the following members.

1. Professor W.D.W. Jayatilake, University of Sri Jayewardenepura
2. Professor S. Mohanadas, formerly of University of Jaffna
3. Dr. K.K.D.S. Ranaweera, University of Sri Jayewardenepura

The Self Evaluation Report prepared by the Department was provided to the review team on 31st October 2008 by the Quality Assurance and Accreditation Council of the University Grants Commission. The review team carried out the review process on 24th, 25th and 26th of November, 2008.

On 24th morning, the review team met the Vice-Chancellor together with the Chairman of the Internal Quality Assurance Unit, Dean, Faculty of Science and Head of the Department of Chemistry. The Vice-Chancellor at this meeting briefed the reviewers on the present situation at the University.

The review team then finalized the agenda for the review process with Head of the Department. The Agenda for the review visit is given in Annexure 1. After finalizing the agenda, the review team met the other members of the academic staff. Thereafter the Head of the Department presented the contents of the SER with discussion. The review team had discussions with the members of the academic staff, technical officers, laboratory attendants, clerk, demonstrators who are the alumni of the Department, student counsellors and the present undergraduates following the B.Sc. General degree programme in Chemistry. The list of persons met is given in the Annexure 2.

Several documents were also perused. These included the Faculty handbook, handouts given to students, minutes of the Departmental meetings, answer scripts, question papers, student feedback forms, peer evaluation reports etc. The complete list of the documents examined is given in Annexure 3.

The review team also examined the facilities available for teaching and learning. These included the lecture theatres, teaching laboratories, equipment, research laboratories etc. The list of facilities observed is given in Annexure 4.

On the 26th November, the review team gave a feedback of the findings to the Head of the Department and other members of the academic staff.

A report will be prepared after the review visit incorporating the findings of the review team. In the report, the strengths and good practices will be highlighted and the weaknesses will also be stated together with some recommendations. Each aspect will be given a judgment of good, satisfactory or unsatisfactory. The draft report will be sent to the Department and the feedback will be obtained. If there is disagreement with any judgment, it would be resolved by the Quality Assurance and Accreditation Council (QAAC) through discussion. The judgment will be submitted to the Standing Committee on Quality Assurance of the UGC for approval. After its approval, the report will be published in the QAAC website, www.qaacouncil.lk. The Department has to improve the quality of the aspects that receive a judgment of unsatisfactory within 6 months of approving the judgments by the Standing Committee on Quality Assurance of the UGC.

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

The Batticaloa University College was established on 1st August 1981 to meet a long felt need of establishing a Higher Educational Institution in the Eastern Province, Sri Lanka. This College began with two faculties; Faculty of Science and Faculty of Agriculture. Both these faculties were affiliated to the University of Peradeniya. In 1986, this University College was upgraded to the status of a University under the name of Eastern University of Sri Lanka (EUSL). Accordingly, the EUSL was established on the 1st October 1986 by a University order dated 26th September 1986 issued under section 2 of the Universities Act No. 16 of 1978.

The Eastern University, Sri Lanka is located in the village of Vantharumoolai, 16 km north of Batticaloa and about the same distance south of Valaichchenai. The University lies on either side of the Batticaloa-Colombo Main Road. The Senate block, the Library, the Senior Common Room and the buildings, which presently house the faculties, lie on the western side of the road. The new Science Block, some buildings belonging to Faculties of Arts and Culture and Commerce and Management, English Language Teaching Unit (ELTU), Students Hostels, Staff Quarters, Sports Centre, Play Ground and a building for Centre for Information and Communication Technology (CICT) lie on the eastern side of the road.

In 1988, two new faculties namely the Faculty of Commerce and Management and the Faculty of Cultural Studies were established. The Faculty of Cultural Studies was then expanded and renamed the Faculty of Arts and Culture in 1991. The Eastern University of Sri Lanka has obtained the approval to establish the Faculty of Health-Care Sciences and the students were admitted to this faculty from 2006 onwards. A Campus of the Eastern University functions at Trincomalee with the Faculties of Applied Sciences and Communication and Business Studies. Swami Vipulananda College of Music and Dance at Kallady, Batticaloa is attached to the Eastern University and renamed the Swami Vipulananda Institute of Aesthetic Studies where degree programmes in music and dance are conducted.

The Department of Chemistry is one of five departments of the Faculty of Science and helps the students in developing their knowledge and skills in the field of chemical sciences. For more than 25 years the Department of Chemistry has produced graduates who employed locally and abroad in different fields related to chemistry.

The department cadre consists of a professor and five academic posts including a post of a temporary assistant lecture. Except the posts of the professor and the temporary assistant lecturer all the academic cadres are filled at the moment. However, only two academic staff is available for work at the time of the review as the others on study leave.
Details are given below.

1. Mr. K. Vaheesar B. Sc. (Hons), M. Phil., C. Chem., M. I. Chem. C. *(on study leave)* Senior Lecturer Grade II
2. **Mr. G. Parthiban B. Sc.(Hons), M. Phil.** Senior Lecturer Grade II
3. **Mr. M. Sithambaresan B. Sc.(Hons.), M.Phil.** Senior Lecturer Grade II
4. Mr. S. Amararthnam B.Sc.(Hons.), M. Sc. *(on study leave)* Lecturer Probationary
5. Ms. K. Priyatharshini B. Sc.(Hons), M. Sc. *(on study leave)* Lecturer Probationary

3. AIMS AND THE LEARNING OUTCOMES

3.1 Aims

According to the self evaluation report presented by the Department of Chemistry the aims of the academic programmes provided by the Department are as follows.

1. To provide an opportunity for undergraduates for fundamental understanding of Chemistry.
2. To provide knowledge, skills and attitudes needed for effective use of technology to solve problems related to society in many diverse areas.

3. To provide prospective chemistry teachers with strong foundation in the application of chemistry principles that will enhance the quality of science teaching provided to schools in the region and state.
4. To provide graduates in securing and maintaining immediate employments.
5. To provide qualified graduates in gaining admissions to and completing graduate programmes in chemistry and related fields.
6. To produce graduates for national benefits.

3.2 Learning Outcomes

According to the self evaluation report the learning outcomes of the programmes are as follows.
After the completion of the course of study in chemistry the students should

1 be fully conversant with major aspects of chemical technology.
2 be able to demonstrate understanding of fundamental physicochemical principles with the ability to apply that knowledge to the solution of theoretical and practical problems.
3 have gained knowledge of the range of inorganic and materials.
4 have become familiar with classical laboratory techniques in qualitative an quantitative inorganic analysis, organic synthesis and electrochemical measurements.

4. FINDINGS OF THE REVIEW TEAM

4.1 Curriculum Design, Content and Review

The semester based course unit system was introduced to the Department in 2000 replacing the traditional three-term system. The curriculum is formulated at the department level and forwarded to the Faculty for recommendation. Prior to approval by the Senate it will be scrutinized by the curriculum evaluation committee which is a sub committee of the Senate. The curriculum is finally approved by the university Council.

As far as the subject content of Chemistry is concerned it covers almost all the basic topics in university level chemistry curriculum. Number of hours for lecturers and practical are comparable with the time period allocated for chemistry in Chemistry Departments in other Sri Lankan universities.

Main problem arises with the revision of the curriculum. No proper curriculum revision has been done since 2000. No new courses especially in the field of applied chemistry are introduced to the curriculum. Further, it was noted by the review panel that in some course units the content of sub units mismatch with each other.

The review panel properly understood the nature of various problems facing the department at present. At the time of conducting the review only two lecturers were in service in the department! The shortage of senior academic has tremendously affected the curriculum development process. The services rendered by the present two staff members were highly appreciated by the panel. Under this condition, the panel understood that the department has no sufficient human resources to start a special degree course in chemistry. The students who did well in the general degree programme have been penalized under this situation

It is the view of the review team that the Curriculum development, Content and Review of the Department can be judged as SATISFACTORY.

4.2. Teaching, Learning and Assessment Methods

The teaching activities of the department include lectures, practical, tutorials and assignments and presentations. As the laboratory facilities are limited, students are grouped and provide opportunities for them to work individually. Students are provided with detailed practical schedules. Demonstrators are appointed form the most recently pass out batches. It was noted by the panel that enough attention has also been paid for laboratory safety. For academic activities the medium of instruction is English. Non-credit English teaching programme is also conducted for students by the English Language Teaching Unit of the University.

A suitable learning environment is available within the department. The condition and the facilities of the lecture theatres and laboratories seem to be are maintained in proper manner.

The library facilities are highly commendable. When compared to the number of students, library has enough number of copies of new editions of standard chemistry books.

All theory courses are one credit courses and the semester ending examinations are one hour duration. Only 2/3 of the final mark for the unit is taken from the end semester examination and the rest has to be scored from continuous assessment. Practical examinations are also held for the evaluation of practical.

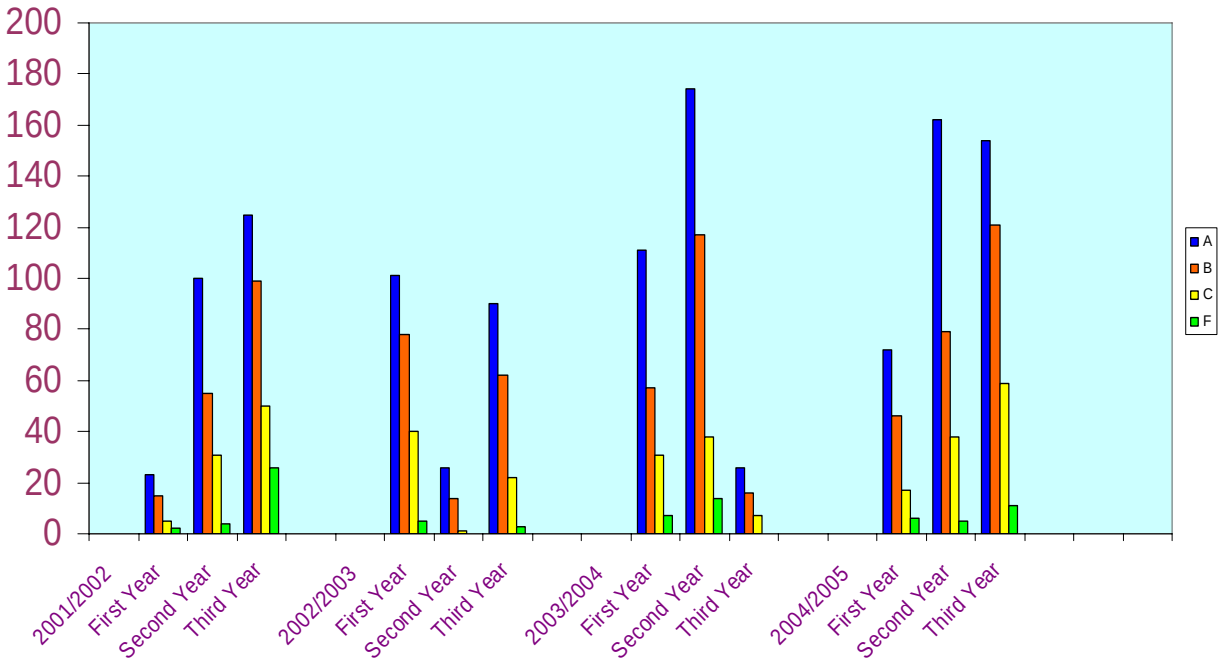
It is the view of the review team that the Teaching, Learning and Evaluation of the Department can be judged as GOOD.

4.3 Quality of Students including Student Progress and Achievements

Admission to the Physical Science and Biological Science degree programmes is carried out by the UGC according to the national policy, which is based on performance at the G.C.E. Advanced Level examination and the choice of students. Therefore, student admission is not under the preview of the University. It has been noted that, the total number of students per annum requested for the Faculty of Science is 150 although the actual number allocated is less than 50% of the number requested (Table 1). At present, due to consequences of the ethnic problem prevailing in the province, no Sinhalese students remained in the faculty.

Table 1. Current student numbers in the Biological and Physical Science streams.

Programme	**Year of Study**	**Academic Year**	**Current student Numbers**	
			Bio Sc.	**Phy. Sc.**
B.Sc.	First Year	2007/2008	35	10
B.Sc.	Second Year	2005/2006 & 2006/2007	13	07
B.Sc.	Third Year	2004/2005	20	01



Availability of an orientation programme at the beginning helps students to be aware of the basic requirements of the academic programmes the students follow. It appears that all students have the opportunity to acquire good language skills as they progress through first two years of the degree programme.However, the review team found that the students are deprived from following a special degree in Chemistry due to dearth of Senior Academics in the Dept. of Chemistry. The review team recommends an inter-university collaborative programme be initiated to offer a special degree in Chemistry for those who become academically eligible for such a level.

It is the view of the review team that the Quality of Students, Student Progress and Achievement of the Department can be judged as SATISFACTORY.

4.4 Extent and Use of Student Feedback

The Department obtains qualitative student feedback about the academic programme and the requirement of infrastructural facilities at various forums such as Faculty Board meeting, practical sessions and lecture and tutorial classes. This is possible as the student number of a batch is less than 50. Students expressed happiness about their interaction with teachers and higher authorities.

The Department has perceived the importance of quantitative student feedback. The teaching process is evaluated by student feedback using a questionnaire since 2006. The questionnaire includes feedback on several aspects of teaching and learning such as student awareness of learning outcomes, organization and clarity of the lecture, motivation and interaction of the lecturer, speed and audibility of the lecture, etc. Student feedback data obtained by the lecturer have been analyzed to identify the strengths and weaknesses of each staff of the department. The Review Team recommends that the same practice may be extended to visiting staff as well as for practical classes. The outcome of the quantitative student feedback

be discussed at a departmental meeting for others to share the information to strengthen the academic programmes.

It is the view of the review team that the Extent and Use of Student Feedback, Qualitative and Quantitative of the Department can be judged as GOOD.

4.5 Postgraduate Studies

Due to lack of facilities and resources the Department of Chemistry is not in a position to conduct postgraduate programmes. The department is planning to offer a M. Sc. programme in Biological and Environmental Chemistry in collaboration with the Department of Botany. The curriculum of the said programme has been recommended by the Curriculum Evaluation Committee subject to minor amendments and it seeks the Senate approval.

It is the view of the review team that the Postgraduate Studies of the Department can be judged as UNSATISFACTORY.

4.6 Peer Observation

It was observed that the importance of the peer observation process has been perceived by the department and a formal peer observation process has been commenced in 2008 using an evaluation form. The feedback of peer observation has been done by a Consultant appointed by the Council of EUSL. Hereafter it has been done between two lecturers on a mutual understanding basis. The peer giving his response in addition can comment on how to rectify, if any drawback is identified.

The peer observation report and the student feedback report of the same lecturer can be correlated to develop a staff development programme for the lecturer concerned, if required.

The Review Team noted that the department engages peers from same department and other universities for moderation of question papers and second marking of the answer scripts.

It is the view of the review team that the Peer Observation of the Department can be judged as SATISFACTORY.

4.7 Skills Development

The Department has adopted several activities for skill development of the students. IT skills are developed through the special courses conducted by the Centre for Information and Communication Technology (CICT). The effort taken by the ELTU for the development of communication and writing skills in English is commendable.

The department has introduced group presentations for students. The review team has an opportunity to attend one of such presentation. That indicated the ability of students for the effective use of modern facilities available for presentations. The proper guidance given by the staff for that type of activities also noted during the presentation.

The Department has also introduced some courses on Management in order to develop knowledge and skills in the field of Management. These courses are properly placed within the curriculum with minimum disturbances to the chemistry content.

It was observed by the review panel that the department has realized the importance of the industrial training as an important component of skill development. The prevailing situation in the area has hindered this activity.

It is the view of the review team that the steps taken by the department for Skill Development can be judged as GOOD.

4.8 Academic Guidance and Counseling

When new students are recruited, they are provided with the Faculty Handbook and an orientation programme is being conducted during the first week of their entry. The handbook provides information about the University, Faculty, Departments, subjects offered, subject combinations, academic programmes and details of course units. The university website too provides the basic information. On the first day of the orientation programme, the Vice-Chancellor, Dean of the Faculty, Heads of Department, Career Guidance Officer, Academic Advisors and Senior Student Counsellor address the students. At this programme an introduction is given to the students on various departments in the faculty, the courses offered by the departments, and the selection criteria to offer the subject concerned for the 1st year in the 3-year-general-degree programme. Students expressed satisfaction about the selection procedures but wished that the teaching process for the special degree be recommenced soon after the trained staff returned to the University.

Whenever students encounter personal problems they can meet the faculty student counsellors or any staff member to this effect. In addition, there is a Senior Student Counsellor to attend to the student welfares but his office is unorganized. For health related problems students can approach University Health Centre. There is a Career Guidance Officer who facilitates students by giving trainings/seminars on job related matters.

It is the view of the review team that the Academic Guidance and Counseling of the department can be judged as SATISFACTORY.

5. CONCLUSIONS

1. Curriculum Design, Content and Review:

Strengths: 1. Covers traditional basic chemistry content relevant to a degree programme
2. Some management courses have been incorporated to curriculum.

Weaknesses: No proper curriculum revision incorporating new areas of chemistry and chemical technology has been done since 2000.

2. Teaching, Learning and Assessment Methods:

Strengths: 1. Proper guidance and attention on academic activities.
2. Continuous assessment components is available in the assessment process.
3. Question papers are moderated by external examiners.

Weaknesses: Shortage of senior academics in the Department.

3. Quality of Students, including Student Progress and Achievements:

Strengths: 1. Orientation programme conducted at the beginning of the academic year makes the students aware of the basic requirements of the academic programmes the students follow.

Weaknesses: 1. Dearth of Senior Academics in the department hinders the offering of a special degree in Chemistry
2. Ethnic problem prevailing in the province discourage Sinhalese students' enrolment for the faculty.

4. Extent and Use of Student Feedback

Strengths: 1. Obtaining qualitative student feedback is in practice.
2. Obtaining quantitative student feedback procedure has begun two years ago.

Weaknesses: 1. Obtaining quantitative student feedback practice may be extended to practical sessions as well as to visiting academics.

5. Postgraduate Studies:

Strengths: 1. M. Sc. programme in Biological and Environmental Chemistry is proposed to be offered in collaboration with the department of Botany

Weaknesses: 1. Dearth of Senior Academics and resources in the department hinders the offering of postgraduate programmes

6. Peer Observation:

Strengths: 1. Obtaining peer observation procedure has begun.

Weaknesses: Peer observation data have to be correlated with the student feedback responses for staff development programme of the lecturer concerned.

7. Skills Development:

Strengths: 1. Lesser number of students and therefore more attention can be paid.
2. Enough library and IT facilities are available compare to the number of students.

Weaknesses: Industrial training and field visits are not in operation at present due to disturbed social situation in the area.

8. Academic Guidance and Counseling:

Strengths: 1. Availability of student handbook.
2. Availability of an organised orientation programme.
3. Availability of Academic Advisors for academic guidance and Student Counsellors for counselling.

Weaknesses: 1. The Senior Student Counselling Unit is unorganized.

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

Aspect	Judgment
Curriculum Design, Content and Review	Satisfactory
Teaching, Learning and Assessment Methods	Good
Quality of Students including Student Progress and Achievement	Satisfactory
Extent and Use of Student feedback, Qualitatively and Quantitatively	Good
Postgraduate Studies	Unsatisfactory
Peer Observation	Satisfactory
Skill Development	Good
Academic Guidance and Counselling	Satisfactory

6. RECOMMENDATIONS

1. Immediate curriculum revision is required incorporating new applied areas of chemistry.
2. Development of a syllabus for special degree in chemistry.
3. Number of academic staff cardre positions be increased.
4. Special facilities should be supplied for the staff to retain them in the University.
5. The assistance of visiting staff should be obtained to cover the different subject areas in chemistry. Special benefit packages may be given to visiting staff.
6. For good chemistry students to progress to a four year chemistry special degree, an inter-university collaborative programme may be organized with another university and such students may be given a temporary transfer to the second university at the end of second/third year until the department become strong enough carry out its own special degree programme..
7. Obtaining quantitative student feedback procedure has to be extended to practical sessions as well to visiting academics.
8. Findings of the student feedback practice may be discussed at staff meetings.
9. Seeking for an inter-departmental and inter-faculty and inter-university collaborative programmes in order to offer a Postgraduate programme related to Chemistry until the department becomes a strong entity to carry out such undertaking independently. .
10. Peer observation data has to be correlated with the student feedback responses for staff development programme of the lecturer concerned.
11. Findings of the peer observation practice may be discussed at staff meetings.
12. ELTU may employ science based teachers to teach English for chemistry students.
13. Introduce some chemistry practicals that involved the application of computer knowledge.
14. The Senior Student Counselling Unit may be organized at a common place near student welfare section for better access to the students.

7. ANNEXURES

Annex 1. AGENDA OF THE SUBJECT REVIEW VISIT

Day 1: 24th November 2008 (Monday)

08.30 – 09.30 am Arrival of Team and brief discussion
09.00 – 09.30 am Meeting with the Vice- Chancellor and the Internal QA team
09.30 – 10.00 am Discuss the agenda with Head/chemistry
10.00 – 1130 am Meeting with head /chemistry and academic staff at the department with tea
10.30 – 12.30 pm Department presentation on the self evaluation Report

12.30 – 0130 pm Lunch

01.30 – 02.30 pm Monitoring department facilities
02.30 – 03.30 pm Monitoring other facilities
03.30 – 0400 pm Meeting with all staff of Department of Chemistry with tea
04.00 – 05.00 pm Monitoring documents

Day 2: 25th November 2008 (Tuesday)

09.00 – 09.30 am Undergraduate student presentation
09.30 – 10.00 am Undergraduate student presentation
10.00 – 11.00 am Monitoring documents with tea
10.30 – 11.30 pm Monitoring teaching 1st year
11.30 – 12.30 pm Meeting with senior student counsellor, representatives of student counsellors, academic advisors, career guidance, ELTU, SCD, CICT
12.30 – 0130 pm Lunch
01.30 – 02.00 pm Meeting with Chairman, Internal QA unit
02.00 – 03.00 pm Monitoring documents with tea
03.00 – 05.00 pm Meeting with non-academic staff

Day 3: 26th November 2008 (Wednesday)

09.00 – 10.00 am Meeting with undergraduate students
10.00 – 10.30 am Meeting with undergraduate students
10.30 – 11.00 am Tea
11.00 – 11.30 pm Meeting with undergraduate students
11.30 – 12.00 pm Monitoring practical
12.00 – 01.00 pm Lunch
01.00 – 01.30 pm Meeting with Head and Staff
01.30 – 03.30 pm Report writing

Annex 2. LIST OF PERSON MET BY THE REVIEW TEAM

Vice Chancellor
Dean of faculty of science
Head of the department of chemistry
Director, Quality Assurance Unit
Director, CICT
Director, Staff Development Centre
Librarian
Head, ELTU
Coordinator, Physical Education
Senior Student Counsellor
Coordinator, CGU
Student Counsellors
Academic staff of the department
Non-academic staff of the department
Students of 1st, 2nd and 3rd year
Demonstrators

Annex 3. DOCUMENTS PERUSED BY THE REVIEW TEAM

Student Handbook 2008-2013
Student handouts
Lesson guides
Statistics on student achievements and progress
Samples of answer scripts
External examiners reports
Peer evaluation reports
Student reports on teacher evaluation
Samples of Student Survey on quality of academic programme
Alumni Survey of Chemistry Department
Minutes of Departmental committees

Annex 3. FACILITIES

New three-story building complex of the department comprising –A large lecture hall, seminar room, three laboratories, and a special laboratory in the first floor of the complex. The second floor has space for three laboratories.
Two computers with internet facilities in the laboratory
Staff rooms with internet access.
Laboratory equipments, chemicals and glassware.