SUBJECT REVIEW REPORT

DEPARTMENT OF ELECTRONIC & TELECOMMUNICATION ENGINEERING

FACULTY OF ENGINEERING
UNIVERSITY OF MORATUWA

09th to 11th October 2006

Review Team :
Prof. S. Mohandas, University of Jaffna
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Dr. K. Pirapaharan, University of Ruhuna

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1. SUBJECT REVIEW PROCESS

Higher education is a 'public good' and is of crucial importance to health, wealth and well being of the society and the economy. Universities must conscientiously exercise their responsibility for quality and standards. University accountability for quality and standards is a key factor in promoting and safeguarding public confidence in Sri Lankan higher education.

Subject review evaluates the quality of education within a specific subject or discipline. It is focused on the quality of student learning experience and on student achievement and is designed to evaluate the quality of both undergraduate and postgraduate programmes.

Subject review process is introduced by the committee of Vice-Chancellors and Directors (CVCD) and the University Grants Commission (UGC). The Quality Assurance and Accreditation Council (QAAC) of the UGC is now conducting subject reviews and institutional reviews in Sri Lankan universities. Prof. Colin Peiris, Quality Assurance Specialist of the QAAC by a letter dated 29th September 2006 notified that the following Review Team has been appointed to perform the subject review of the Department of Electronic and Telecommunication Engineering (DETE), Faculty of Engineering, University Of Moratuwa from 09th to 11th October 2006.

- Prof. S. Mohanadas, former Vice-Chancellor, University of Jaffna,
- Dr. Sanath Alahakoon, Head/Department of Electrical & Electronics Engineering, University of Peradeniya,
- Dr. K. Pirapaharan, Head/Department of Electrical and Information Engineering, University of Ruhuna.

Key features of the subject review process are preparation of a Self Evaluation Report (SER) by the department on the discipline they teach, and the evaluation of the student learning experience and on student achievement in the subject according to the aims and learning outcomes as stated in SER by the subject review team (Review Team).

SER of the DETE, University of Moratuwa prepared in July 2006 was submitted to the members of the Review Team requesting to perform the subject review. It contained 01 page Introduction, 11 pages of Undergraduate Studies, 02 pages of Postgraduate Studies, 03 pages of Academic Staff, 05 pages of Laboratory facilities, 02 pages of Interpersonal issues, 02 pages of Alumni, and 02 pages of Conclusions. There were 19 pages of Appendix and the total pages are 47.

The Review Team evaluated the quality of education in the DETE according to the aims and learning outcomes as claimed in their SER. The purpose of the visit was to consider and test the evidences provided by the department.

At 8:30 am on the 09th October 2006 the Review Team arrived at the university and met the QA specialist of IRQUE (Improving Relevance and Quality of Undergraduate Education) project for half-an-hour to be familiarized with the subject review process. At 9:00 am the Review Team including QA specialist, IRQUE Project was invited for a welcome meeting by the Acting Dean of the Faculty of Engineering for which Head, DETE was also invited. Thereafter the Review Team met the Head of DETE and senior staff members of the department. The agenda for the review process was finalized. During the morning session Dr. Chulantha Kulasekere, senior lecturer of the department gave a presentation which comprehensively covered the progress made by the department on all aspects included in the SER in the presence of all members of the academic staff of the department. The review process was thereafter progressed by the Review Team according to the agenda (Annex 1).

The Review Team held meetings with the following groups and individuals.

- Head of DETE
- Academic staff members of DETE
- Non-academic staff members of DETE
- Undergraduate students
- Postgraduate students
- Academic advisor, Student counselors, and Coordinators

The Review Team visited the following places of DETE for observation.

- Lecture Halls
- Seminar Rooms
- Analog laboratory
- Digital laboratory
- Telecommunication laboratory
- Microwave laboratory
- Optoelectronics laboratory
- Computer laboratory
- Computer Aided Design (CAD) laboratory
- Intelligent machines laboratory
- Postgraduate research laboratory
- Dialog research laboratory
- Electronic workshop
- Radio room
- Department library

Lecture halls and laboratories were visited again when the students were following lecturers and practicals respectively. The departmental library possesses books and periodicals used by the staff members only. However students could also make use of this library. List of books available in this library is not maintained. The library is kept under the custody of the Head of the dept.

The Review Team went through the following documents.

1. Faculty handbook 2006
2. Department handbook 2006
3. Copies of lecture and practical handouts
4. Copies of tutorials and assignments
5. Copies of reports submitted by students for June term projects and final year projects
6. Final year project – Supervisor meeting record
7. Senior students – Industrial training comments
8. Calendar for B.Sc. engineering 2006 & 2007
9. Students feedback and its analysis
10. Question papers with the comments of the moderator
11. Marking schemes
12. Answer scripts marked by the examiners
13. Detailed mark sheets and mark return sheets duly filled with marks and grades along with the statistical analysis
14. Suggestion made by student representatives about the semester system
15. Peer review report for lecturers
16. List of awards and scholarships

17.   Minutes of the department academic staff meeting
18.   Statements on departments' vision & mission, departmental aims and learning outcomes. This was made available at the request of the members of the Review Team as it was not included in the SER.

The Review Team at the end of the 3-day-visit made judgments on each of the eight aspects namely (i) curriculum design, content and review (ii) teaching learning and assessment methods (iii) quality of students including student progress and achievement (iv) extent and use of student feedback, qualitative and quantitative (v) postgraduate studies (vi) peer observation (vii) skills development and (viii) academic guidance and counseling. On this day only stated whether each of these eight aspects is good or satisfactory or unsatisfactory.

2. THE UNIVERSITY, FACULTY AND THE DEPARTMENT

In 1960, the Institute of Practical Technology (IPT) was founded at Katubedda with aid from the Canadian Government in a fifty-acre block of land overlooking the Bolgoda Lake. With the objective of expanding the engineering education of the country, the Ceylon College of Technology (CCT) was begun in 1966 utilizing the resources of the IPT with the assistance of United Nations Development Programme through UNESCO. The engineering degree and technician programmes of CCT designed to produce an engineer or technician with practical training as an integral part of his study. Under the provisions of the University Act, No.1 of 1972, CCT became the Katubedda Campus of the University of Ceylon. The Katugedda Campus began with one Faculty that of Engineering and Architecture in 1972.

When Ceylon subsequently became a Republic in 1972, the name changed to Katubedda Campus of the University of Sri Lanka. With the implementation of Universities Act No.16 of 1978, the Katubedda campus of the University of Sri Lanka acquired the status of an independent University with its present corporate name University of Moratuwa, Sri Lanka, with three Faculties of studies namely (i) the Faculty of Engineering, (ii) the Faculty of Architecture and Town & Country planning, and (iii) the Faculty of Physical and Applied Sciences. In 1981, the Faculty of Physical & Applied Sciences was merged with the Faculty of Engineering. To shore up the rapid expansion of Information Technology Industry in the country, the Faculty of Information Technology was established in 2001 as a third Faculty of the University.

Faculty of Engineering is the largest faculty among the three faculties of the University of Moratuwa comprising over 200 academic staffs and around 3500 undergraduate and postgraduate students. It has 12 departments namely (i) Chemical and Process Engineering, (ii) Civil Engineering, (iii) Computer Science Engineering, (iv) Earth Resources Engineering, (v) Electrical Engineering, (vi) Electronic and Telecommunication Engineering (vii) Materials Engineering, (viii) Mechanical Engineering, (ix) Textile & Clothing Technology, (x) Transport & Logistics Management, (xi) Management Technology, and (xii) Mathematics. The first ten departments are offering undergraduate programmes while last two departments are service departments offering the undergraduate modules to other ten departments according to their requirement. The Faculty of Engineering is offering nine fields of specialization in B.Sc. Engineering degree and one Bachelor of Design in Fashion Design and Product Development, B.Des. (FD & PD).

The DETE was established in 1969 under the CCT initially with 12 students. In 1975 the Department was able to start its first Master's degree programme in Electronic and Telecommunication Engineering with just 3 students.

The competitive environment prevailing in the electronics, telecommunication and computer industries has resulted in the rapid deployment of advance technologies in Sri Lanka. Consequently, challenging and lucrative career opportunities have become available to Electronic & Telecommunication Engineers. As a result, there is a high demand for this field of study among the engineering undergraduates. To accommodate the need of increasing intake and upgrading the quality of the programme and the facilities, the department has moved to its new building, costing 100 million Rupees Governments funding, in 2003. Further, with the JICA grant worth of 509 million Yen, the expansions were also implemented for the postgraduate courses, and research programmes in Antennas and Propagation, Speech and Image Processing, Industrial and Medical Electronics, RF Communications, Intelligent Transport Systems, Semiconductor Materials and Optical Communications.

Eventually the current student intakes for undergraduate and postgraduate courses are 100 and 40 respectively. The Department also have 9 senior academic staff members who had foreign training in the field of study such as Optoelectronics, Physical Electronics, Medical and Industrial Electronics, Optical Communications, Digital Communications, VLSI design, Signal Processing and Electromagnetics. With all these resources, the department has continuously shown the expansions and improvements to its programmes of study to cater the need of the society and country.

3. AIMS AND LEARNING OUTCOMES

The Review Team focused its attention on the vision and mission of the particular higher education institute and how the specific study program has designed its aims and learning outcomes to match the overall vision and mission of the institute.

Vision of the University of Moratuwa

The Vision of the University of Moratuwa is to be a center of excellence of higher learning, research and related activities with emphasis on national relevance, international recognition, innovation and creativity in engineering, architecture and other professional disciplines.

Mission of the University

The Mission of the University of Moratuwa is to be an internationally recognized center of excellence in higher learning, research, consultancy and other professional activities in Engineering, Architecture and allied professional fields by creating an environment conducive to nurturing the inquiring mind and developing skills for a diversity of challenges and thus to be a leader in contributing to sustainable scientific, technological, social and economic development of Sri Lanka.

The vision and mission statements of the DETE were also observed by the team.

Vision of DETE

The Vision of DETE is to be an international center in the field of Electronic and Telecommunication Engineering for high quality research and dissemination of knowledge to those who seek it.

Mission of DETE

It is the Mission of DETE to develop in its students, the knowledge and the engineering skills necessary to be highly sought after in, and to keep pace with, the rapidly advancing Electronics and Telecommunications industry.

In order to achieve these objectives, the DETE has set the following aims and learning outcomes.

3.1 Aims

- To provide the students with a core knowledge in the fields of electronics, telecommunication and allied disciplines.

- To provide the student with the skills to adapt to the rapidly changing nature of these fields in terms of technology

- To bring out the hidden talents of a student to enable independent and autonomous work

- To develop the soft skills such as effective communication, teamwork and presentation skills necessary to be successful in the industrial environment.

- To provide the opportunity and platform for productive research in the fields of electronics and telecommunication engineering that will stimulate economic growth of the nation.

3.2 Learning Outcomes

An undergraduate upon completion of the course offered by DETE will have,

- A sound knowledge on the core concepts of electronics, computing and telecommunication and allied disciplines

- A high level of competency in independent work allowing the student to complete a task with minimal guidance and maximum autonomy

- The ability to innovate and come up with novel product and system designs.

- The conceptual skills to keep pace with the rapidly changing technologies of electronics and telecommunication.

- Mastery of the soft skills required for successful employment such as communication skills, Review Teamwork etc.

- The capability to plan, adapt and move up along a challenging carrier path in a rapidly changing industrial environment

4. FINDINGS OF THE REVIEW TEAM

The findings of the Review Team during the visit to the Department of Electronic and Telecommunication of University of Moratuwa from 9th to 11th October 2006 are summarized in this section of the report. They will be classified according to the eight aspects that the quality assurance process concentrates on.

4.1 Curriculum Design, Content and Review

The DETE of University of Moratuwa as the rest of the university has adopted the semester system from year 2000 onwards. At this stage there had been a major curriculum design. During the design process of the curriculum, the course modules offered by each department of the University of Moratuwa has been classified into 6 categories. They are Common Core (CC), Common Elective (CE), Group Core (GC), Group Elective (GE), Field Core (FC) and Field Elective (FE). The Department of Electrical Engineering and Department of Computer Science and Engineering together with this department are considered as the group.

The degree program today consists of 4 levels, within which 7 semesters of 14 weeks each, a June term (soon after completion of Level 1) of 9 weeks and an industrial training period of 6 months have been distributed. The complete program takes four years and two months for completion under normal circumstances. The department has been able to design the course content giving emphasis to the core concepts of electronics, computing and telecommunication by guiding the students to choose courses from different categories accordingly. The content of each course has been decided ensuring fundamental scientific principles required for apprehending the subject together with suitable continuous assessment schemes. The design of the course content had been done taking into account the industry inputs mainly obtained through Department Industrial Consultative Board, of which the meeting minutes were available for inspection.

The Review Team used the discussion with staff and the presentations made by the department as well as meetings with undergraduate and postgraduate students together with the documents provided in order to evaluate the effectiveness of curriculum design, content and review in achieving the said aims and learning outcomes.

The department has been maintaining the tradition of introducing minor curriculum revisions as and when needed and major curriculum revisions once in three to five years. The revised curriculum prepared after such a revision meeting recently conducted was available for inspection. There was clear evidence also about obtaining student feedback and comments and recommendations from Department Industrial Consultative Board for the process. It was also mentioned during the meeting with the staff of the department that a complete re-structuring of the semesters (to convert the program into a 8-semester one with at least 17 weeks per semester) is also under consideration in order to ensure even work load across the program. While these can be highlighted as good practices regarding Curriculum Design, content and review, the following can be mentioned as some of the concerns of the Review Team.

Some of the comments received during the meeting with a sample of undergraduates comprising level 2 and 4 (level 3 undergraduates were not available due to industrial training) must be mentioned and brought to the attention at this point. They are summarized in Table below.

Positive Comments	Negative Comments
Industry expectations are full filled by the course almost up to 80%	Offering 10 subjects in level 3 during 14 weeks creates an uneven work load distribution over semesters.
June term projects are highly appreciated.	There must be a clear limit for the number of courses with mini-projects per semester.

	Change of weightage of credits in courses with mini-projects.
	The problem of scheduling the laboratory classes prior to covering the relevant theory in the class.
	The students have not been given information on the newly revised curriculum.
	Need more flexibility in selecting courses in the 2nd and 3rd level also (currently it is less).

It is the view of the Review Team that the Curriculum Design, Content and Review can be judged as GOOD.

4.2 Teaching, Learning and Assessment Methods

The DETE uses several standard teaching, learning and assessment methods. The teaching mainly is carried out through lectures conducted in lecture halls, which were observed by the Review Team. The lecturing environment seemed to be on average conditions with possibilities to use audio-visual aids when necessary. The Review Team also visited some lectures conducted by the faculty members of the department and they found to be of sufficient interaction with the students. The department also has launched a web based learning system where, the lecture notes are uploaded to the web prior to the particular lecture so that the students can go through them and come prepared.

The computing facilities seemed to be adequate for all the students to have access to the teaching material published on the web when needed. As for general learning environment, the student have access to two study areas within the DETE and also a student centre, where they can refer to notes and have discussions etc. In addition to the central library facilities, students also have access to a smaller collection of books in the department only through a faculty member. Since the self learning through mini projects has also been given a considerable weight in this study program, the Review Team also investigated the accessibility of the laboratories for the undergraduates. The department has made arrangements to keep the laboratory open till 18.00 each day under the monitoring of the non academic members of the department. There is an arrangement for the students to use the laboratories after 18.00 through an approval procedure from the head of the department. Thus, the Review Team concluded that the department has been able to provide satisfactory accessibility of laboratories for the students.

The standard assessment methods such as tutorials and assignments, interviews, mini project demonstrations and presentations, mid and end semester examinations are used by the department for assessing the performance of the students. The Review Team inspected the laboratory guides, tutorials, mid and end semester examination papers and answer scripts together with comments from moderators and the marks sheets. The assessment process found to be in proper order and particularly with undergraduate project where a group of four students work together, the department has been successful in evaluating the individual performance in a satisfactory manner so that individual performance within the group work is duly assessed. One recommendation the Review Team would like to make here is the link up

of the student time involvement with the assessment and credits they get particularly when it comes to the mini projects.

It is the view of the Review Team that the Teaching, Learning and Assessment Methods can be judged as GOOD.

4.3 Quality of Students including Student Progress and Achievements

Quality of the students is the major factor for the success and reputation of a programme. As a result of the rewarding career job opportunities locally and globally for the Electronic and Telecommunication Engineers, it is obvious that the demand for this field of study is very high.

The Faculty of Engineering is undoubtedly the most sought after faculty by the prospective students for engineering education in Sri Lanka requesting Moratuwa by over 95% of applicants as their first choice. Moreover for last 6 years, the DETE is the top in the student preference list among all engineering disciplines in the University of Moratuwa. Therefore, there is no doubt that DETE has the most excellent among the top students of this country due its reputation, success and employment opportunity.

While following the undergraduate programme, students need to obtain the credit requirements through following lecture classes and laboratory sessions and carrying out mini projects, June term project and final year project as well as industrial training. During its visit, the Review Team has the evidence of one of the mini project competition and it was a good display for student progress. Review Team has also observed 8 final year student projects and impressed with the quality of the work. The Review Team has witnessed that the laboratories are equipped with all required equipment for the laboratory sessions and student project work. In addition to that the Electronic workshop is providing crucial support for circuit implementation in the student project work. Moreover, most of the undergraduate project works are funded by local institutions such as SLIC, Dialog, etc. The Dialog research laboratory is also playing major role of providing support especially in the postgraduate studies. With all facilities and frame work, the Review Team has noticed that the students have good opportunity develop their line of work and they are progressing well. However, postgraduate students have found difficulties to proceed with their work due to lack of industrial support and financial assistantships.

Most of the undergraduate students find jobs before their graduation in reputed institutions. It shows the quality of the students and the demand for them in the job market. Since the DETE is the most desired department amongst the students in the university, the students from DETE feel the self satisfaction to be a member of this department. Also most of the students feel the social respect for them form the society. The average initial salary of graduate from this department is around LKR 40,000 due to the prevailing job market for Electronic & Telecommunication Engineers around the globe which is well above the average salary of the fresh graduate of the other fields in Sri Lanka. Most of the students feel that they are succeeding towards their goal because of the job opportunity, lucrative payment and social status.

However, almost all of the undergraduate students have complained about the work load that they have to bear during this programme. Especially they have pointed out of following 10 modules in a single semester in the Level 3. They further stated that as a result of the heavy work load, they need to restrict their studies with in a boundary just to get through the exams without having the profound knowledge. The Review Team felt that it is a bad practice to

over-load students beyond to their capacity since some students pointed out that they don't retain the content of the modules which they have studied in Level 3.

Considering all the inputs, it is the view of the Review Team that the Quality of Students including Student Progress and Achievements can be judged as GOOD.

4.4 Extent and Use of Student Feedback, Qualitative and Quantitative

Students' feedback is obtained by DETE at various forums about the quality of academic programmes, teaching and learning processes and the quality of other facilities. The department adopted a method to get the students' feedback quantitatively by using an evaluation form (questionnaire). The questionnaire is given by the teacher to the students at the end of each course of lectures where major criteria used for evaluation are (i) enthusiasm, (ii) organization, (iii) rapport/interaction of the lecturer, (iv) task orientation, (v) clarity, (vi) learning experience, (vii) handouts, (viii) pace of lecturer, (ix) difficulty, and (x) workload. The responses received were statistically analyzed.

The Review Team found that a majority of students have expressed satisfaction (agree) and the overall average reached for many lecturers is 4.0 out of 5.0 where 5.0 stand s for strongly agree and 1 for strongly disagree. The questionnaire also has a column for any other comments. Majority of the students made comments requesting for other facilities such as more tutorials, practicals, text books etc. The teacher observed these comments and the responses made in the main questionnaire and take steps to improve the quality of teaching/teaching environment.

The Review Team found that the good practices found in the quantitative students' feedback can be further strengthened if the responses of the students and other comments were discussed with the Head or at a Departmental staff meetings for other to share the information and for further improvement. It was also revealed to the Review Team at the meetings with the staff that the department acquires students' feedback qualitatively at the discussions in the laboratory sessions/tutorials where a close interaction is possible. Students also express their view at the Faculty Board meetings where 02 student representatives are attending. Head of the Department and Dean of the Faculty meet student members and students' feedback on curriculum revision, selection criteria for special degree from time to time whenever necessity arises. This was confirmed by the students. At these occasions students' suggestions on all matters of quality of education were received by the authorities. Students expressed to the Review Team that they have suggested new formula to select the special students to the department and to reduce the workload of other subjects and of level 3. Head of the Department confirmed these requests and he told that these are taken up at the faculty level.

The Review Team noted that the suggestion box kept at the department never been used by the students as they prefer face-to-face interaction and quantitative feedback through the questionnaire. Students expressed happiness of the learning outcomes of the department.

It is the view of the Review Team that the Extent & Use of Student Feedback by the members of the staff of the department can be judged as GOOD.

4.5 Postgraduate Studies

The DETE is conducting both research based and course work based M.Sc. degrees. They are of 01 year duration for full-time and 2 years for part-time students. The research based M.Sc programme consists of very little taught courses up to 3 credits for the students benefit. The coursework based M.Sc programme consists of research work for 3-4 months duration. A student fails to complete this research component is awarded a postgraduate diploma.

Therefore a part-time student who completes successfully one year course work evaluation procedure but not the research work can end up with the diploma. There are two M.Sc programmes for part-time students conducted by the department, viz. (i) M.Sc in Telecommunication, and (ii) M.Sc in Electronics and Automation and about 50 students have registered for these two courses. However about 03 students are following full time M.Sc programme in Telecommunication.

The DETE is also supervising MPhil students. The MPhil duration is 2 years (full time) and 3 years for part-time students. Two students are following full time M.Phil programme while another student on part-time basis in Electronics and Automation. None is registered for Ph.D programme.

The department possesses an equipped postgraduate laboratory accompanied with a seminar room. The postgraduate students state that the research environment is good and it is further strengthened wit the Dialog GSM laboratory. However number of students doing postgraduate research is very low and their publication is also limited. The postgraduate students pointed out that several setbacks. They are (i) no incentives for research as the employees are interested in transfer of technology and the employers do not wish to release the young graduates for research during the early part of their career, (ii) as the employment opportunity is higher with good pay, postgraduate students faces financial problem if they stand of their own for postgraduate degree, (iii) there is a demand for foreign postgraduate degree compared to local ones, (iv) teamwork for postgraduate research is lacking in the department, (v) research topic is not continued with new students, and (vi) no forum is created for greater interaction of postgraduate students within the department (Faculty/University). The department has to address at least some of the concerns pointed out above. There are adequate foreign qualified academic staff members in the department and in the group of field in the faculty. Therefore there is plenty of scope for improvement in the M.Phil and Ph.D programmes.

It is the view of the Review that the present status of the Postgraduate Studies of the department can be judged as SATISFACTORY.

4.6 Peer Observations

The department follows a procedure to observe the theory class teaching of an academic staff by another member of the department on mutual arrangement where one deliver the lecture and the other reviews (observe) the lecture. The Reviewer gives his/her comment on a prescribed form called Peer Review Report which comprises seven items viz. (i) establishing continuity from the previous lecture, (ii) capturing and maintaining the attention of students, (iii) use of presentation tools, (iv) delivery of content (v) conclusion of the lecture (vi) achievement of the learning objective of the of the lecture, and (vii) any other comments/suggestions. The Reviewer comments on each of the seven items. The Reviewer and Lecturer thereafter take each item and attend to the followings based on the comment made by the Reviewer, viz. (a) discussion, (b) agreement reached, and (c) proposed action.

The Review Team has seen some of these reports with the comments made by the observer and the agreement reached between the Observer & Lecturer and the proposed action plan. The Quality Assurance Unit of the of the Faculty can take up this matter and a Reviewer or a team of reviewers could give their comments. The team of reviewers may comprise at least one member from outside the department. This peer observation report could be obtained at least one in a semester and the progress has to be monitored. The peer observation should be extended to part-time and visiting staff but the Head of the department should be very tactful

in this very sensitive matter. Peer observation of practical classes is another matter to be attended in the future. The reports of the peer observation and students feedback have to be correlated to the Staff Development Programme required for an academic staff member. The members of the academic staff understand the importance and value of the peer observation and they started to practice the peer observation.

The practices such as moderation of question papers, second marking of the answer scripts are carried out. Evaluation of the presentation, June term projects, viva and research project seminar is also done by a group of academic staff. The comments made by the external moderator, second marking examiner and external member in viva and other presentation has to be taken up at staff meetings for further improvement in the quality of teaching and evaluating processes.

It is the view of the Review Team that the present status of the Peer Observation adopted by the members of the staff of the department is judged as GOOD.

4.7   Skill Development

Expected skills may vary depending on the major field of the studies. However, generally the following skills are expected from an Engineer.
- Balanced knowledge between theory and practice
- Innovative and Creative
- Managerial
- Entrepreneurship
- Intellectual & Communication
- Leadership & Social responsibility
- Time management & working under pressure
- Group working

The curriculum is well defined and taught by the experienced staff members as well as the laboratories are maintained in superior quality. Also the graduates have very good demand in the job market. Considering these factors and observing the teaching, learning and assessment factors, the Review Team recognized that the graduates have the balanced knowledge between theory and practice.

The project based modules (mini projects), June term projects and the final year projects outputs are playing major role of developing the innovative and creative skills of the students. The Review Team convinced with the displays that students has shown to ensure their innovative and creative skills.

As the June term project, students are requested to produce some simple product which is marketable. Student need to go for the survey, meeting with the people/industry to find the market for their product and produce the item as a final product. This practice will help them to improve their managerial, entrepreneurship and intellectual skills. E-club activities, industrial sponsored final year project and industrial training will also help them to improve those skills.

Students need to present their mini projects, June term projects and final year projects in front of the staff members and their colleagues. This practice helps them to improve their communication and presentation skills.

E-club activities are the good examples for improving the leadership qualities and social responsibilities. Since the e-club activities are not compulsory for all students, there is no guarantee for the participation of all students. Even though, the Review Team is satisfied with

the e-club activities, department needs to implement a system to make sure participation of all students.

Time management skills and working under the pressure are the real challenge in most of the institutions in Sri Lanka since we have not been trained for those form our childhood. The Review Team has been informed by the Head of the Department and the final year students that some labs are open 24 hours in order to meet the deadline of the final year projects and the other project work. On the other hand, students complained that they were heavily loaded with the course load and project work. However, the Review Team has observed the commitment and group working from students during their visit.

Considering all the facts, it is the view of the Review Team that the Skill Development can be judged as GOOD.

4.8 Academic Guidance and Counseling

Senior academic staff members of the department have been appointed as Academic advisor (01) and student counselors (02). The department handbook and faculty handbook are made available and are updated annually. In addition a website provides detail information on academic matters of the department. Every student has the opportunity to meet Academic advisor or any academic staff of the department to obtain advice regarding selection of optional modules and special degree. However students feel that the lecturers in some instances failed to correlate the module they teach with the future modules or application. The department has to improve the academic guidance to get the students' best satisfaction in their learning experience.

Whenever the students face personal problems they meet the Student counselors or any members of the academic staff. However, the department has to establish an organized counseling system. These matters have to be taken up at the departmental staff meetings and at relevant other fora such as meeting of the student counselors with Chief Student Counselor or with Professional Counselor. These counseling and guidance should produce upliftment to the academic achievement of the students and their career development. Regarding career development, the department conducts seminar with participation of prominent people from the industry to give guidance and views on how to select a career when the students pass out. This is further strengthened with the newly introduced mentoring programme of the development where level 2 students are assigned to a senior professional who provides advice and guidance regarding the engineering profession.

It is the view of the Review Team that the present situation with regard to Academic Guidance and Counseling adopted by the department can be judged as SATISFACTORY.

5. CONCLUSIONS

The judgment given for the eight aspects of the subject review are summarized below.

Aspect	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	Satisfactory
Peer Observations	Good
Skill Development	Good
Academic Guidance and Counseling	Satisfactory

The overall judgment is suspended

The Review Team appreciates the excellent working arrangement made by the department during the review visit. The staff members understand about the review process and displayed all necessary documents to assist our review. Whenever the Review Team needed more information or documents the Head of the Department and the academic staff provided the same. The non-academic staff too facilitated our process with the common objective towards the development of the department. The Review Team is grateful to all the categories of staff in the department for the support given during our visit.

6. RECOMMENDATIONS

The Review Team would like to make the following recommendations in order to improve the quality of education in the DETE.

- It is recommended that the work load of the students be balanced since the Review Team has the observation that the Level 3 students are heavily loaded.

- The department may consider limiting the project based modules to two in a semester since it comparatively takes a large part of the time of the students.

- The department may consider attracting more students to do postgraduate programmes leading to M.Phil and Ph.D. as the dept. has the necessary man power and infrastructure. Increased research culture would uplift the teaching and recognition of the department. In turn, this recognition would bring more research students to the department.

- Postgraduate students must be encouraged for greater interaction amongst themselves in the Faculty, University and with industry by the way of presentation, meetings and seminar on regular basis to share knowledge, idea and experience.

- It is recommended that the peer observation be extended to practical classes as well.

- The comments, suggestions and other feedback obtained from the moderators of the question papers and second examiner, both local and foreign should be taken up for discussions at appropriate forums such as result boards, departmental meetings and curriculum review committee meetings.

- The department may consider implementing a mechanism to make sure the participation of all students in the common activities such as e-club.

- It is desirable to develop a more organized student counseling system within the department to address to the personal problems faced by the students.

- It is strongly recommended that the learning environment be further improved to enhance the quality of education. In particular:
  - Hostel facility for all level of students
  - Greater interaction amongst students and availability of members of staff for student-staff meetings
  - Meeting high cost of materials for final year projects

7. ANNEXES

Annex 1. Agenda for the Review Visit

Day 1

09:00	09:30	Welcome Meeting with Dean and HoD
09:30	10:00	Discussion of Agenda of Review
10:00	**10:30**	**Tea Break**
10:30	11:30	Department Presentation
11:30	12:30	Discussion
12:30	**13:30**	**Lunch Break**
13:30	15:00	Observation of department and other facilities
15:00	15:30	Observation of Laboratories and Practical Class (Practical 01)
15:30	16:30	Meeting with Department Academic Staff
16:30	17:30	Meeting with Students
17:30	18:00	Brief Meeting of Reviewers

Day 2

09:00	10:00	Observation of Documents
10:00	**10:30**	**Tea Break**
10:30	11:30	Observation of Lecture (Lecture 01)
11:30	12:30	Meeting with Technical and other Non-Academic Staff
12:30	**13:30**	**Lunch Break**
13:30	15:30	Observation of Final Year Projects (Practical 02)
15:30	16:30	Observation of Practical Class (Practical 03)
16:30	17:00	Brief Meeting of Reviewers
17:00	17:30	Observation of Robot Competition (Practical 04)

Day 3

09:00	10:00	Meeting with Postgraduate Students
10:00	**10:30**	**Tea Break**
10:30	11:00	Academic Guidance and Counseling Core Aspect Meeting
11:00	12:00	Meeting with HoD and Staff for Reporting
12:00	**13:00**	**Lunch Break**
13:00	13:30	Observation of Lecture (Lecture 02)
13:30	17:00	Report Writing