SUBJECT REVIEW REPORT

DEPARTMENT OF MECHANICAL ENGINEERING

FACULTY OF ENGINEERING TECHNOLOGY
OPEN UNIVERSITY OF SRI LANKA

16th to 18th July 2008

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CONTENTS

1. SUBJECT REVIEW PROCESS

The subject review process of the UGC evaluates the quality of student learning process within a specific subject or discipline in terms of its management and quality assurance aspects at its study program level. The review evaluates the quality of education, focusing on the student learning experience and on student achievement related to both undergraduate and taught postgraduate programs. This report reviews the quality and management of academic programs delivered by the Department of Mechanical Engineering (DME) in the Faculty of Engineering Technology at the Open University of Sri Lanka.

The review was carried out following the guidelines established by the CVCD and the University Grants Commission in the Quality Assurance Handbook for Sri Lankan Universities, published in July 2002.

The review was carried out during 16th to 18th July 2008 by the team of four members, Prof. C.L.V. Jayatilleke (NIBM), Prof. R.A. Attalage (Dept of Mechanical Engineering, Univ. of Moratuwa), Dr. K. Pirapahran (Dept. of Electrical Engineering, Univ. of Ruhuna) and Dr. A.C. Ratnaweera (Dept. of Mechanical Engineering, University of Peradeniya).

Review team visited the Open University of Sri Lanka on 16th July and had meetings with the Dean of the Faculty of Engineering Technology at the Dean's Office where he gave a brief description of the history of the Faculty and its future development trends. Subsequently the review team met the Acting Vice Chancellor Dr. H.D. Goonetillake at his office. Vice Chancellor explained briefly the development plan of the University along with the corporate plan.

Head of the Department, Eng. Ms. P.R. Dadigamuwa made an excellent presentation initiating the evaluation process, which covered all the information pertaining to Staff and Facilities, Curriculum design contents and reviews, Assessment methods, Evaluation procedures, Teaching/Learning process, Postgraduate activities etc. Following the presentation there was a very cordial meeting with the members of the staff where reviewers had an opportunity to discuss different aspects of the quality assurance program.

Subject review process at the Department of Mechanical Engineering (DME) of the Open University of Sri Lanka (OUSL) was conducted following the guidelines provided in the Quality Assurance Handbook for Sri Lankan Universities and was reviewed at the Departmental level according to the categories listed below as given in the Self Evaluation Report (SER):

1. Curriculum design, content and review,
2. Teaching, learning and assessment methods,
3. Quality of students including student progress and achievements,
4. Extent and use of student feedback (both qualitative and quantitative),
5. Postgraduate studies,
6. Peer observation,
7. Skills development and
8. Academic guidance and counselling.

The agenda of the three-day visit is given in Appendix 1.

The information related to the above eight aspects were collected by having discussions with the Dean, Head of the Department, members of the academic and non-academic staff, a group of undergraduate and also postgraduate students (see Appendix 2 for persons met during the visit), by observation of the teaching process (see Appendix 3), by observing the facilities at the DME and the Faculty (see Appendix 4) and by examining the documents provided by the DME (see Appendix 5).

Each of the eight categories was judged as good/satisfactory/unsatisfactory, noting the strengths, good practices and weaknesses in each of these. Considering the judgment of the eight aspects, an overall evaluation is reported at the end of this report out of the three judgments confidence/limited confidence/no confidence in the academic program.

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

The OUSL had started in 1980 by incorporating the Sri Lanka Institute of Distance Education (SLIDE) which had been functioning under the Ministry of Education and the External Services Agency of the University of Sri Lanka at that time. The activities commenced under the purview of two Boards of studies, one for Management, Science and Technology (MST) and the other for Humanities and Social Science (HSS). Subsequently there was some restructuring that resulted in the transfer of the Management subject area to the HSS, and MST being re-interpreted as Mathematics, Science and Technology. The MST started two degree programmes, one in Sciences and one in Engineering. Thereafter, three faculties were established, the Faculty of Engineering Technology being one of them. The Departments of study under the Faculty of Engineering Technology at its establishment had been Civil Engineering, Mechanical Engineering, Electrical and Computer Engineering, Mathematics and Philosophy of Engineering, and Textile Technology (later renamed Textile and Apparel Technology). The Department of Agriculture Engineering (later renamed Agricultural and Plantation Engineering) was constituted later.

The vision of the DME emanating from the vision of the university is “to be a leader in open and distant learning renowned for excellence, in human resource development and empowerment of people to achieve their latent power”.

The mission of the DME is “to enhance opportunities for life-long learning of adults through Open and Distance Learning and support excellence in research and scholarship”.

Current annual intake of the Faculty is around 2000 students and they directly register to one of the 09 different fields of specialization available in the Faculty. Students have the freedom of changing their field of specialization during their studies.

3. AIMS AND LEARNING OUTCOMES

3.1 Aims

The Study programme at DME offers opportunity for the students to enrol to programs having different exit levels leading to Advanced Certificate in Technology, Diploma in Technology and Bachelor of Technology in the specialization of Mechanical, Automobile,

Manufacturing and Mechatronics engineering. In addition, the DME offers a Bachelor of Industrial Studies in the specialization of Industrial Management.

The programs of the DME having different exit levels have distinct aims stated in the Subject Review report. In this regard, the aim of the Degree programme is to provide a high quality, balanced undergraduate study programme in engineering, while meeting the requirements of major Engineering Institutions, both in Sri Lanka and overseas.

As for Postgraduate programs, DME offers a Postgraduate Diploma and also a Master Degree in Industrial Engineering for those who having Engineering related Bachelor Degree together with acceptable field experience. The review report does not indicate clearly specified aims and learning outcomes.

The Department has few semi-open spaces confined to conducting day-school sessions, number of laboratories including computer laboratory, a workshop, an Automobile repair garage and a seminar room. The spaces for conducting day-school sessions are equipped with white boards, OHP's. The seminar room which is air conditioned has all audio-visual facilities. The laboratories in the DME are Mechanical Engineering, Automobile Engineering, Mechatronics, Manufacturing Automation Systems together with Computer. The Workshop provides Basic Training for all Diploma students in the Faculty while operating as a service center to the whole university together with the Automobile Repair Garage.

As of April 2008, there are 20 academic cadre positions in DME, 16 of which are filled. Three Professor Positions are vacant and the DME has utilized funds allocated for these positions to recruit five temporary lecturers.

An adequately equipped Library is available for the use of the students and books can be borrowed by the students at Level 3 and above.

3.2 Learning outcomes

Similar to aims, programs at different exit levels have distinct learning outcomes. On successful completion of the Degree programme, the following learning outcomes are expected to be achieved by the graduates:

- Be creative and capable of analytical and innovative thinking in Engineering
- Be able to address social, environmental and economical issues related to engineering
- Be able to access and utilise engineering knowledge for the benefit of society.

4. FINDINGS OF THE REVIEW TEAM

The Review Team findings are given in the following sub sections under the headings 4.1 through 4.8:

- Curriculum design, content and review
- Teaching, learning and assessment methods
- Quality of students including student progress and achievement
- Extent and use of student feedback
- Postgraduate studies

- Peer observation
- Skills development, and
- Academic guidance and counselling.

4.1 Curriculum Design, Content and Review

The curriculum of the DME of the OUSL had been developed around twenty years ago considering the aspects of the distance learning for its degree programme. The design and development of the original curriculum had taken about two years with the consultation and assistance of all stakeholders, academia, professionals and industry all the way through seminars and workshops. The intended outcome of the curriculum is that the graduates are expected to be creative and capable of analytical and innovative thinking in engineering while able to address social, environmental and economical issues related to engineering in addition to the ability to access and utilize engineering knowledge for the benefit of society. A major revision of the curriculum was made in 2001, but this time, only using the inputs from the Faculty, Alumni and Professional Institutions as it was felt adequate for the purpose. Also the revised curriculum is more open in structure since it allows a student to decide his/her individual needs and aspirations by allowing him/her to obtain a cross-disciplinary engineering degree by means of selecting courses meaningfully as allowed by regulation and pre-requisite constraints. The regulation of choosing courses is ensuring that students would accomplish a right blend of knowledge, skills and training which are required for an engineering degree.

The content of the curriculum for both Bachelor of Technology and Bachelor of Industrial Studies is categorised as Engineering, Industrial/Academic, Mathematics, Management, English, Computer Literacy, Training and Projects where minimum and maximum credits in each category is defined. Also some new courses have been introduced considering the scope in job market and the technology development.

The Review Team would like to state its observations and recommendations as the following:

- DME is providing balanced curricula for students to develop their knowledge, skills and training as per the overall learning outcomes stated. The categories encompassed in the contents of the curricula provide the basis for this. Further, the content of the curricula is in line with the conventional degree programme in engineering offered by other universities. However, the review team notes that the program philosophy corresponding to each of the study programs (i.e. Certificate, Diploma & Degree levels) conducted by the DME is not explicit even though aims and learning outcomes are stated except for the postgraduate program. This is an important element in judging the appropriateness of the aims and learning outcomes.
- The open-structure of the curriculum by allowing students to choose cross-disciplinary courses is a positive feature within the framework of distance learning. There is a minimum number of credits to be taken by a student from each category thus providing flexibility while introducing the balance nature. At levels 1 and 2, all compulsory courses are common to all streams of specialization and provide the basis of the foundation needed in any branch of engineering. They are Mathematics (03 courses), Properties of Materials, Basic Workshop Practice (02 courses), Communicating Engineering Information, Heat and Fluids, and Principles of Electricity. At level 3, compulsory courses for Mechatronic specialization takes a distinct path. At level 4, the Industrial Studies program introduces courses of Operations Management and Operational Decision

Making while technology program offers subjects like Plant Maintenance and Work Services. Finally at level 6, courses take the form of application oriented to supplement the scientific/technological base. The Individual Project and the Group Project at level 6 are very positive features in the Technology stream curriculum.

- The introduction of new courses and new specializations from time to time to meet the job market requirements is found to be a positive element in the curriculum design and review. New courses such as Communicating Engineering Information and in Diploma in Mechatronic Engineering are solid examples.
- At the inception, consultation and assistance of all the relevant stakeholders had been incorporated in a planned manner. This is an important step in the curriculum design that provides acceptability and enhanced effectiveness to the study programs. As such, the only major curriculum revision that had taken place in 2001 had not taken into consideration any inputs from the industrial sector. However, there is no indication of a plan for the next major curriculum revision. In order to suitably incorporate the current trends of the industry needs and maintain the dynamic nature of the program, it is necessary to define a plan with specific intervals for curriculum revision for each of the programs.
- Even though, some feedback has been obtained from the past students during the curriculum revision and development, there are no formal alumni groups for providing feedback in curriculum development. Hence setting up of formal Alumni to carry the identity of the program and to provide regular feedback at curriculum development events could be envisaged.
- Most of the students with whom the review team had met are of the view that the duration of the degree programme is too long. Therefore, if it is possible, shortening the duration may attract more prospective students while reducing the number of drop-out students in the middle.
- There is no evidence that the curriculum design, development and revision has been carried out by considering the accreditation requirements for the degree programme. It is good to consider those requirements during the next major curriculum revisions focusing the aspects of program philosophy etc.

Except few drawbacks, it is evident that the DME is maintaining a positive approach in Curriculum Design Content and Review.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as GOOD.

4.2 Teaching, Learning and Assessment Methods

In the OUSL setup, although there is no requirement of GCE (A-L) to enter into OUSL, a student entering after GCE (A-L) examination requires a minimum of 5 years to complete the study program, while majority of those who complete take 1 or 2 years over the minimum period. In order to distribute the student work load evenly over the total study period an upper limit is set on the student credits that can be taken in any academic year. Teaching and learning is facilitated through a combination of lecture materials, day classes, laboratory work, tutorials, project work and industrial training.

The method of evaluation adopted by the Department comprises continuous assessment through laboratory work in selected modules, tutorials and assignments and the year end examination.

Since there is no formal teaching mode practised in the OUSL setup, the course material is playing the major role of knowledge delivery. The course material development and revisions have taken place with proper meeting with all interested parties concerned. The Team has also gone through the course materials; and finds these to be well prepared and printed. Students have also expressed their satisfaction with most of the course materials. However, the Team noticed following shortfalls in the course materials and its development.

- The formal input from alumni has not been taken for the revision of course materials.
- Some course materials need to be revised and updated from time to time (ex. Thermo-Fluids). Further the revision cycle of the course material need to be fixed.
- Delivery methods of course materials need to be improved. We also took congnizance of the students' view that the learning material are difficult to understand compared with the distance learning material of other institutions such as the Open University, UK.
- Because of the different entry levels allowed in the Open University system, repetitions of content in some courses are observed. It can be overcome by subdividing the courses into smaller courses.

The Team observed with satisfaction that the laboratory reports of the students were marked by experienced staff in the form of an interview with the student. The main objective of this practice is to minimize copying, but it offers the student an additional learning experience. The staff commitment in conducting this sort of evaluation is highly commendable as the student numbers especially at lower levels are very large. It is interesting to note that in order to get the students prepared for the laboratory sessions, the pictures of the apparatus are displayed in the website for the students' reference. However, some laboratory classes and apparatus were outdated and need to be upgraded especially in Strength of Materials and Thermodynamics laboratory sessions. While discussing with the staff members, the Team learned that some apparatus have already been ordered to upgrade the quality of the laboratory sessions.

Question papers and model answer scripts were made available for the Team observation. The Team is satisfied with the question papers and model answer scripts. However, the evidence of the moderation was not recorded anywhere. Therefore, the Team recommends having some mechanism to keep the records of the moderation information. Moreover, the review team also notes that some kind of overall moderation of each study program is not taking place.

The industrial training component is jointly supervised by the Department, the Faculty Training Engineer and the Technical Supervisor at the training place. The trainee maintains a detailed log book during the training period. A clear guideline on industrial training is prepared and provided to the student. However, monitoring mechanism to check the guidelines are not developed.

Guidelines for external examiners and instructions for visiting academics are prepared and documented. Again the monitoring mechanisms to check their use are missing.

The Undergraduate project is a compulsory component in the curriculum. A detailed guideline to students about their undergraduate project is available and delivered in advance. However, the guideline fails to mention the expected outcome from students. An external examiner is invited for the final project presentation/evaluation. Also standard forms are

available to get the observations from external examiner which is one of the good practices observed here.
The Team is of the view that the teaching, learning and assessment methods currently in place are adequate to achieve the objectives that the Department had set for itself.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as GOOD.

4.3 Quality of Students, including Student Progress and Achievement

As a result of the open entry admission policy, the OUSL does not have any control over the quality of the student entering to the faculty. This has been identified as the main reason for high rate of drop offs during the degree programme. Although the annual intake (at Level 1) for the Faculty of Engineering Technology is about 3000 students, merely 1% (about 33 students in year 2007) has obtained their bachelor degree every year. Further, in year 2007, only three students have obtained the Bachelor Degree specializing in Mechanical Engineering.

Review team would like to state its observation and recommendations as the following:

- Despite the fact that the drop off rate is high, Mechanical Engineering graduates are well recognised and employed in public and private sectors as same as the graduates from conventional universities. Further, several graduates have obtained their postgraduate qualifications up to doctoral level from well recognised universities. Further, Mechanical Engineering degree programme has been recognised by IESL, the professional engineering body in Sri Lanka.
- High rate of drop off is the matter which needs to be paid attention immediately. Lack of student competency at the entry level for undergraduate studies in engineering is one of the main reasons of this. Therefore, attracting students with good A-L qualifications may change the high drop off rate. The Faculty is currently working on the possibilities of attracting students with good A-L qualifications. However, the Faculty and the Department needs to take necessary action to improve the public awareness on the degree programs as a means of attracting students with good A-L qualifications.
- Even though the student progress up to the degree level is significantly low, a considerable number of students obtain diploma level qualifications every year. They have found employment both in public and private sectors.
- Extra skill of self learning ability is particularly observed from the graduates of Mechanical Engineering while their self confidence and motivation are very high.
- Maintaining the employment records of the past graduates will contribute to the student guidance which ultimately improves progress rate and achievements.
- Mechanical Engineering generally produces fewer graduates than some other departments. In year 2007, out of 33 graduates from the Faculty, Mechanical Engineering has produced only 3.

The high rate of drop off is inevitable as the DME has not much control over the student admission process with respect to quality of incoming students and their aptitudes. However, the Department of Mechanical Engineering is working hard to improve the Quality of students, including the student progress and achievements.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as SATISFACTORY.

4.4 Extent and Use of Student Feedback

Evidence presented to the Team revealed the existence of some questionnaires administered to the students from time to time by different teachers. However there is no standard mechanism to collect feedback from students at the end of every year for all courses. Also most of the collected questionnaires have not been summarised except a few sets of questionnaires. Again the follow-up action based on the summary has not been stated anywhere. Therefore the Team proposes the following action on extent and use of student feedback.

- As a quantitative approach, a mechanism needs to be practised to collect the student feedback for every course and laboratory session in every year.
- As a qualitative approach, all the feedback forms need to be summarised and follow-up actions need to be taken.

Evidences were available on students-staff liaison committee meetings to obtain student feedback or discuss the matters of concern of students. However, follow-up actions were not mentioned in the minutes of the meetings.

Minutes of meetings to discuss students' matters with student representatives were available. In addition, there were some students' request letters also available in the file. Again, follow-up actions were not mentioned in the minutes of the meetings.

It was also observed that there is no formal mechanism to get the feedback from Alumni regarding their concerns.

It was interesting to note that students have direct number dialling facility to contact the staff members to discuss matters of concern related to the courses. It is one of the good practices observed in this Department.

The Review Team observes that an intensive effort must be made to take the feedback information for every courses and laboratory sessions. It should continue to make use of this information to make qualitative and quantitative improvements in teaching and learning.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as SATISFACTORY.

4.5 Postgraduate Studies

The DME offers postgraduate programs in the forms of Postgraduate Diploma in Technology (Industrial Engineering), Master in Industrial Engineering and also Master of Philosophy that form a sequence. Those who have successfully completed the earlier one can proceed to one that comes later. The entry requirement to the Postgraduate Diploma in Technology is an Engineering degree with 02 years of acceptable field experience. In addition, DME has recently commenced an on-line M.Sc. program in Sustainable Energy Engineering in collaboration with the Division of Energy Technology, Royal Institute of Technology (KTH), Sweden.

With reference to the completion requirement of the Postgraduate Diploma, a student has to fulfil a 02 credit requirement of Level 7 taught courses while that for the Master degree is the research project together with a 01 credit requirement of Level 7 taught courses. Master of Philosophy students are expected to fulfil the requirements only of the research component. The Master of Philosophy postgraduate program has a regulatory requirement to be completed within a period of 02 years.

The subject review report submitted by the DME does not provide evidence of declared program philosophy, aims and learning outcomes for any of the postgraduate level programs in contrast to the lower level study programs offered by the DME. It is also noted that the postgraduate programs heavily rely on the assistance of the external consultants in running these programs.

The Team observed 02 postgraduate day-school sessions one on Strategic management (10 students) and the other on Operations Research (09 students). The Team found the method of delivery using modern audio-visual teaching aids to be good. Later the Team also met 17 Postgraduate students mainly comprising M.Sc candidates who were currently following the program (from years 2005 to 2008). These students expressed the view that the method of delivery by the external consultants, access to supervisors and Library facilities were good. However, they indicated that the learning material in some courses were not properly updated and found repetition with the same intensity at previous levels. They also indicated that on-line learning method was not available to them despite the DME having declared that it is following the distant learning philosophy. The research projects usually originated from the industry as students are usually employed.

The information pertaining to the number of students registered for postgraduate programs are not available in the document submitted for the review. However, the numbers completing the Postgraduate Diploma and Masters Programs are available from year 2002 onwards but the numbers appear to be relatively low (i.e. Masters 18, Postgraduate Diploma 49). Master of Philosophy students have a difficulty in completing during the stipulated period as they have to conduct the research while doing their professional work. This is seen as a major issue. However, the Team notes the lack of scientific publications by the Academic staff stemming out from the postgraduate programs and also absence of postgraduate programs in more technology based specializations in DME.

The review team would like to make the following observations and recommendations

- Postgraduate program should have its program philosophy, aims and learning outcomes clearly stated in line with the other lower level study programs
- Scientific publications by the Academic staff stemming out from the postgraduate programs should increase. Further DME should envisage postgraduate programs in more technology based specializations of DME in addition to those in Industrial Engineering.
- Academic staff should work towards developing research proposals to obtain funds thereby enabling them to attract more students.
- DME should enhance the effectiveness of the progress monitoring of the research students so that completion rate can be increased.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as GOOD.

4.6 Peer Observation

There are no formal arrangements to conduct peer observations as there are no formal lectures as in a conventional university. Direct peer observation at classroom level is not feasible due to the inherent nature of the type of education (i.e. self learning as opposed to classroom teaching, however a limited number of day classes are conducted). However, informal peer interactions take place in the Department meetings and course team meetings where issues pertaining to teaching and learning are discussed. They are basically extended to the level of a dialogue between the notes writer and editor. The review team recommends that the formal class room peer, observation and evaluation mechanisms to be introduced to day-school sessions.

In addition, DME employs a method of peer reviewing of laboratory sessions by internal staff and also reviewing of presentations made by the students in the Project work. It is thus recommended to strengthen the current mechanisms and make them more formalised using a standard format that would be common to all peer reviewing of DME. This will enable to maintain the continuity as well as observe the trends of progress.

It was evident from the interactions the Team had with the staff that peer review is done in an informal manner within the existing framework. However, it is recommended to extend the peer review process also to the day classes and consolidate the record keeping.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as SATISFACTORY.

4.7 Skills Development

The efforts taken in skills development through the strategy “Learning to learn” is an outstanding practice observed at this Department to improve the self learning skills of the students.

Every student needs to do at least 5 presentations during his undergraduate studies which enable him/her to improve his/her communication skills. Further, Students are improving their writing skills by writing reports on laboratory classes, industrial training, undergraduate project and assignment of some courses.

Student’s innovative and analytical skills are developed through the undergraduate projects and some courses, such as in Mechatronics, where the entire evaluation based on the design. Design based evaluation methods are encouraged in other courses as well to promote the innovative, creative and analytical skills of the student.

Industrial training helps students to interact with industry and leads them to develop their management, leadership and entrepreneurship skills. In addition, non-technical courses are also offered to improve the knowledge in personal development, economics, finance, management and entrepreneurship.

7 % slack is given for the student to choose the subject in their own interest. However, students have no choice of taking Aesthetics courses since those courses were not offered.

Skill development of the staff members has the direct impact on the skill development of the students. However, the dedication of the staff members on research or collaboration work with industry were not widely observed due to the commitment they have to make in the academic work.

The Team views the achievements of the DME on this regard are commendable related to engineering and transferable skills.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as GOOD.

4.8 Academic Guidance and Counselling

Faculty of Engineering Technology provides a Student Guide Book to all students when they seek admission. Further, a handbook is available in all three languages. These booklets are updated annually therefore, up to date information is available. In addition to that a half-day prior orientation is given to all prospective students before their registration. Upon registration, the students receive an activity diary which includes all the necessary contact information. Further, the faculty and the department maintain a very informative web page.

A counsellor has been appointed for the Faculty of Engineering Technology to handle the non-academic student matter. Further, two academic staff member are assigned as academic counsellors from each department. Also students are encouraged to contact academic staff members at any time regarding their problem with the courses. Academic counsellors help the students in selecting courses and credits on the registration day.

Review team would like to state its observation and recommendations as the following:

- The students contact the respective teachers of the courses over the e-mail regarding various issues including academic activities. It is noted as a good practice in a distance learning programme to improve the staff student relationship and the teaching learning experience.
- The university is equipped with direct dialling telephone facility which has improved the contractibility of the staff members and hence the process of academic guidance.
- Appointment of all staff members as academic advisors and assigning each of them an equal number of students may help to improve the present student advisory set up. Such a set up will easy out the communication difficulties as a result of the large number of students.
- On request, the university provides temporary accommodation for the students who travel from far. This helps the students significantly during the examination time and laboratory sessions.
- The Team recommends that a proper training should be made available for the student counsellors. Further, formal arrangements should be made available for the students who wish to seek help from a professional counsellor whenever required.

The Team is of the opinion that the proper implementation of an effective counselling and guidance scheme is limited by the factors such as distance learning structure and large number of students. However, the Faculty and the Department have taken every effort to provide effective counselling and guidance to the students.

Considering the above facts the review team is of the opinion that the overall achievement under this aspect is considered as GOOD.

5. CONCLUSIONS

1. Curriculum Design, Content and Review:

The DME has maintained a positive approach in Curriculum Design, Content and Review from the inception of the Department following an approach comprising defining the aims and learning outcomes, taking into account the opinion of all relevant stakeholders and also being in line with those of the conventional universities. Moreover, a new specialization Mechatronics had been introduced demonstrating the dynamism of its nature. DME has provided balanced curricula at all levels of study programs with an open structure permitting the choice of cross disciplinary courses. A major curriculum review has taken place once that is in 2001, that was sensitive to the end user needs. However, there is no systematic plan laid down indicating as to how the DME would look into the future in this regard. Further, focus has not been made for any professional accreditation requirement following the local trend and if that is so attention should be paid to the study program philosophy at each level including postgraduate and also the possibility of looking into the feedback of Alumni.
Judgment: **Good.**

2. Teaching, Learning and Assessment Methods:

The course material in general is of good quality in terms of content and structure, and falling in line with the distant learning mode. However, learning material in certain courses has to be changed an upgraded to be on par with others. A special focus was made by former students highlighting the degree of simplicity of the material of the Open University of UK that helped understanding, and also some of the duplication taking place in courses. The method of evaluation adopted by the Department comprises continuous assessment through laboratory work in selected modules, tutorials and assignments, and the year-end examination. The staff commitment in conducting the evaluation in spite of large student numbers is commendable. The record keeping of Question papers/Model answers are not complete and Moderation is not recorded. An overall moderation of each study program in its own perspective, that is not taking place and DME, should take this aspect into consideration. This shortcoming leads to loss of continuity of information and difficulty in analysing the trends. Even though some of equipment in certain laboratories (of basic level courses) is outdated DME is using them to their fullest potential. However, recently developed laboratories could do better to utilise their potential focusing more on industry oriented models and activities.
Judgment**: Good.**

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

The OUSL policy is to keep the doors open for all students with minimum qualifications. This fact has in a way led to a very low completion rate. Moreover, the DME performs poorly within the Faculty in this regard. However, almost all the graduates have found rewarding employment in both public and private sectors and are reported to be performing confidently as much as any other graduate who had followed a similar level of engineering study programs. Judgment**: Satisfactory.**

4. Extent and Use of Student Feedback:

The collection of feedback information and their compilation by the DME on evaluation of Teacher performance, Practical sessions and Field visits are not properly carried out. A more accountable way of analysing the feedback and using such information in all teaching/learning activities should be implemented. Judgment: **Satisfactory.**

5. Postgraduate Studies:

The DME has its postgraduate programs (taught program based) mainly focussing only on Industrial Engineering. In view of the expertise and the facilities available in the DME, efforts should be made to extend the Postgraduate programs in to Technological related areas as well. This will enable both Academic and Non-academic staff to be engaged together in industry oriented technology based research work using the best potential of staff and also industry based students. Academic staff should also be more oriented to knowledge generation type of work within the framework of a distant learning mode. Judgment: **Good.**

6. Peer Observation:

The nature of distance learning does not permit peer observation of the type of class room teaching. An indirect way of peer observation takes place in curriculum design activities, preparation of course materials, Laboratory classes, Student project presentations and regular departmental and course team meetings. The Day school classes can be peer reviewed as the staffs involved is mainly outside consultants. Judgment: **Satisfactory.**

7. Skills Development:

Engineering skills development is properly addressed in the teaching/learning process of DME. Development of transferable skills such as communication skills is also given sufficient attention. The period of Industrial Training also plays an important role in this regard. Judgment: **Good.**

8. Academic Guidance and Counselling:

The mechanisms that are in place for academic guidance and counselling appear to be very effective. They vary from very generic mechanisms at Institute level to appointment of individual staff members to student groups. However, Student Counsellors need to be trained in this respect. Judgment: **Good.**

Based on the observations made during the visit, the eight aspects are judged as follows:

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

The overall judgment is suspended

6. RECOMMENDATIONS

The review Team makes the following recommendations to improve the quality of teaching, learning and evaluation process, The recommendations are given under the categories of human resources, physical resources and procedures and processes.

Human resources

- Action should be taken to fill the positions that are currently vacant and should use a fill-gap measure to handle the work load of 08 staff members who are on leave even though it is a temporary issue.
- New recruits of academic staff and consultants to be trained on techniques related to delivery of courses, assignment preparation and student skill development in distance learning mode.
- Academic staff is to be provided with training related to academic guidance and counselling considering the fact that the staff in an Open University requires this skill even more than those in a conventional University.

Physical resources

- The physical facilities available in the laboratories of basic level subjects are inadequate and not up-to-date. Moreover, recently established laboratories should attempt to develop in-house industry oriented meaningful teaching models using locally available components.
- Continuous upgrading of the computer laboratory, IT equipment and software are recommended.
- The University library needs expansion to accommodate the lower level students as they are denied of lending library facilities currently.

Procedures and practices

- Common practices adopted in other international distance learning programmes could be considered to improve the quality of all eight aspects.

- DME should establish a plan to review and change the curriculum to maintain its dynamic nature in meeting end use trends. This includes industry as well as future accreditation requirements.
- Proper collection of the information of student feedback and analysis of the same systematically with proper record keeping for improving the teaching learning process is recommended.
- Action to ensure higher level of involvement of the staff in postgraduate programs, knowledge generation and industry related research projects is recommended.
- Action should be taken to reduce the drop off rates. Improvements in academic guidance and counselling practices and also having repeat examinations can help in achieving this.
- Reduction of the minimum time period required for completion of the degree could be considered. This can have a positive impact on attracting good students who are prepared to work on full time basis.
- Forming a formal alumni group and obtaining its feedback in every aspect may help to improve the features of curriculum design, job opportunities, student progress and recognition etc.

7. ANNEX

Annex 1. AGENDA FOR THE REVIEW VISIT

16-07-2008 – Wednesday

Time	Activity	Location
08.30 - 9.00	Private meeting of review. Panel with QAA Council Representatives	Block 17 (Head's room)
09.00 -09.30	Discuss the Agenda for the visit.	Head's Room
09.30 -10.00	Meeting with the Dean Engineering	Dean's Office
10.00 - 10.30	Meeting with the Vice Chancellor (working with Tea)	VC's Office
10.30 - 11.30	Department Presentation on the self evaluation report	Seminar room (New Auto. Lab)
11.30 - 12.30	Discussion	Seminar Room
12.30 - 13.30	Lunch	Guest House
13.30 - 14.30	Observing departmental facilities. Visit to strength of materials Thermo Lab. Workshop MAS Lab Computer Lab. Automobile Lab Mechatronics Lab	
14.30 - 15.00	Meet the Director Regional Services	Seminar Room
15.00 -15.30	Visit to the Library	
15.30 - 16.30	Meeting with Technical staff and other Non-Academic Staff (working with Tea)	Seminar Room
16.30 -17.30	Brief meeting of reviewers	Seminar Room

17-07-2008 – Thursday

Time	Activity	Location
09.00 - 0930	Observing Teaching - Lecture (Post graduate- MEM7117 - Strategic Management- Day School 1)	New Auto Lab
09.30 - 10.00	MEX 7211- Operations Research -Day school 1	New Auto Lab
10.00 - 11.00	Observing Documents (working with Tea)	Seminar Room
11.00 - 12.00	Meeting with Department Academic Staff & Training Engineer	Seminar Room
12.00 - 12.30	Meeting with postgraduate students	Seminar room
12.30 - 13.30	Lunch	Guest House
13.30 - 14.00	Observing teaching Practical class -MEWl130 - Basic Training I & MEW2130-Basic Training II	Work Shop
14.00 - 14.30	Observing Teaching- Lecture on Project Guide lines -For final year Undergraduate students	Seminar room
14.30 - 15.00	Observing Student's Presentations (working with Tea)	Seminar Room
15.00 - 16.00	Meeting with undergraduate students	Seminar room
16.00 - 16.30	Meeting of reviewers	Seminar Room

18-07-2008 – Friday

Time	Activity	Location
09.00 -09.30	Observing Teaching Practicals MEX3231 - Strength of Materials I -Labs	Block 17 Mech.Eng.Lab
09.30 - 10.00	MEX 4243 - Controls systems Engineering - Lab	New Auto Lab
10.00 - 10.30	Meeting student counselors/ Academic advisors	Seminar Room or Head's Room
10.30 - 11.00	Reviewers private discussion (working with Tea)	Seminar Room or Head's Room
11.00 - 12.00	Meeting with head and staff for reporting	Seminar Room
12.00 - 13.00	Lunch	Guest House
13.00 - 17.00	Report Writing (Working with Tea)	Seminar Room

Annex 2. PERSONS MET DURING THE VISIT

Vice Chancellor (Acting) – Eng. Dr. H.D. Goonetilleke
Dean, Faculty of Engineering – Eng. Dr. J. Liyanagama
Director, Regional Education Service (RES): Mr. P.K. De Mel
Student Counselor: Mr Ravi De Mel

Academic staff

Eng. Prof. NR Arthenayake
MSc Eng (Hons) (Moscow), MSc Eng (Strathclyde), FIE (SL),
FIE (India), MASME, CEng.

Eng. WRGA Wijesundara
BSc Eng (Hons) (Sri Lanka), Mphil (OUSL), LLB (OUSL), MIE (SL),
MIAE (SL), CEng

Eng. Dr. SAMANS Senanayake
BSc Eng (Hons) (Moratuwa), MSc (Cranfield), PhD (Cranfield)

Eng. (Ms.) PR Dadigamuwa (Head)
BSc Eng (Hons) (Moratuwa), Mphil (OUSL), MIE (SL), CEng

Eng. (Ms.) TSS Jatunnarachchi
BSc Eng (Hons) (Moratuwa), MPhil (OUSL), AMIE (SL)

Eng. (Ms.) TMDN Medagedara
BSc Eng (Hons) (Peradeniya), MPhil (SHU)

Eng. WR de Mel
BSc Eng (Moratuwa) MSc (Peradeniya), MEng (NUS)

Eng. Mr. DC Wijewardena
BTech (Eng) (Hons) (OUSL), MASc (British Columbia)

Eng. Dr. SDR Perera
MSc (Hons) (Odessa), MPhil (OUSL), PhD (SHU)

Eng. JHSK Jayamaha
BSc Eng (Peradeniya), PG Dip. Comp (Colombo),
MSc Eng (Wolverhampton), AMIE (SL)

Eng. (Ms.) IU Aththanayake
BSc Eng (Hons) (Peradeniya)

Mr. HD Nelaka Shayamal Priyankara
BTech (Eng) (Hons) (OUSL)

Non-Academic staff

Postgraduate students
17 postgraduate students

Undergraduate students

Annex3. TEACHING SESSIONS OBSERVED

Day school session on the course of MEM 7117 Strategic Management with 10 students

Day school session on the course of MEX 7211 Operations Research with 09 students

Lecture on Carrying out Undergraduate Projects (including 02 Project presentations by students)

Annex 4. FACILITIES OBSERVED

Main Library
Common Computer facility
Strength of Material laboratory
Thermodynamics Laboratory
Engineering Workshop
Manufacturing System laboratory
Automobile laboratory
Mechatronics laboratory
Automobile Garage

Annex 5. DOCUMENTS REVIEWED

Course Material
Students' feedback sheets for a few courses (No standard format)
Past question papers, marking sheets and model answer scripts
Lab sheets, Laboratory reports
Assignments & assignment mark sheets
Guideline for visiting academics
External examiners' report on project presentations
Student guidance for industrial training
Minutes of student-staff liaison committee meetings
Minutes of meeting with student representatives
Students Guide Book 2007

Project reports
Minutes of course revision team meetings - not available
Minutes of Department meetings - not available
Questions papers with moderators comments - not available