# SUBJECT REVIEW REPORT

## DEPARTMENT OF TEXTILE & CLOTHING TECHNOLOGY

## *FACULTY OF ENGINEERING UNIVERSITY OF MORATUWA*

19th to 21st July 2006

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## 1. SUBJECT REVIEW PROCESS

Subject review process of the UGC involves evaluating the quality of education within a specific subject or discipline, focusing on the student learning experience and on student achievement. The subject review process evaluates the quality of both undergraduate and taught postgraduate programs. It is understood that the final responsibility for quality and standards remains within the institution itself, since it alone has the powers to control and to change existing practices.
Subject review process at the Department of Textile and Clothing Technology (DTC) of University of Moratuwa was conducted following the guidelines provided in the Quality Assurance Handbook for Sri Lankan Universities, published by the CVCD and University Grants Commission in July 2002. The quality of education was reviewed according to the aims and learning outcomes given in the self-evaluation report.

The following eight aspects of education were reviewed at the Departmental level:

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 observations;
7. Skills development;
8. Academic guidance and counseling.

The review team visited the department for three days, namely 19th, 20th, and 21st July 2006. The agenda of the three-day visit is given in Annex 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 academic support staff, a group of undergraduate and postgraduate students (see Annex 2 for persons met during the visit), by peer observation of the teaching process (see Annex 3), by observing the facilities at the Department (see Annex 4) and by examining the documents provided by the Department (see Annex 5).
Each of the eight aspects was judged as good/satisfactory/unsatisfactory, noting the strengths, good practices and weaknesses in each. Considering the judgment of the eight aspects, an overall judgment is reported at the end of this report selecting one of the three options: confidence/limited confidence/no confidence; in the academic program.

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

The University of Moratuwa was inaugurated by gazette notification on 15th February 1972. The technical college that had existed in this location has later been converted to a degree awarding institute.
The Department of Textile and Clothing Technology of the University of Moratuwa had its beginning as a division of the Department of Mechanical Engineering in 1976, and it

was upgraded to Department status in 1986. The Department is the only one in the Faculty of Engineering to offer two degree programs at undergraduate level: the Bachelor of Science in Engineering, and the Bachelor of Design in Fashion Design and Product Development. In this review only the Bachelor of Science in Engineering is evaluated.
The academic activities of the Department, with particular reference to B.Sc. Engineering programme, are conducted under two specializations: Textile Process Engineering and Apparel Manufacture.
Current annual intake of the Department to the Engineering programme is 62 and for the design programme is 42. The entry to the programme is done directly by the UGC based on the Z – score obtained in the GCE (A/L). Further the department offers three postgraduate taught courses and postgraduate research degrees. The number of part time postgraduate students is 10.
At present (2006 July) there are 20 Academic Cadre positions in DTC, all of which are filled. Eight Technical Officers, one clerk, four Laboratory Attendants, two drivers and one labourer are also attached to the department. (Source: SER).
The students have the access to the university main library in addition to a small collection in the department.

## 3. AIMS AND LEARNING OUTCOMES

### 3.1. Aims

The B.Sc. Engineering Degree programme of the Department of Textile & Clothing Technology has been formulated with the aim of imparting a strong foundation in the principles of engineering with emphasis on the fields of textile and clothing technology. Theoretical principles are taught and complemented by an application-oriented practical programme including industrial training, supplemented by activities to enhance much needed skills to face the demands and challenges of the industry.

The Department aims to:

- Provide a high quality undergraduate programme in line with general University policy which will produce highly employable graduates to the textile and apparel industry.
- Provide a sound understanding of yarn manufacture, fabric manufacture, textile properties, textile finishing, garment manufacture, quality management, cleaner production and environmental management.
- Incorporate in its course structure necessary modules to equip the students with the necessary management, marketing, IT and communication skills with minimal additional training.
- Gear the students' learning in order to promote teamwork, organisational skills and time management.
- Enhance the employability of the students by providing exposure and practice on state of-the-art machines using cutting edge technology.
- Provide up-to-date teaching facilities to facilitate effective learning by the students, strengthened by suitable monitoring and quality assurance mechanisms.

- Promote research and development, consultancy, testing services and continuous professional development activities for the benefit of the workforce of the industry.
- Promote postgraduate studies among our graduates and other top and middle management of the industry.

### 3.2. Learning Outcomes

On the successful completion of the degree programme a Textile & Clothing Technology graduate of the Department should be able to

- Demonstrate the ability to apply the principles of engineering with special reference to textile and apparel technology to applications in the industry.
- Show skills in problem analysis, solution design and implementation.
- Illustrate the development of knowledge in the field of textile and clothing technology through research and innovation.
- Maintain good leadership and team skills.
- Represent a broad perspective of issues not confined to the field of textile and clothing technology.

## 4. FINDINGS OF THE REVIEW TEAM

The following eight aspects of education reviewed at the Departmental level are described in sub sections from 4.1 to 4.8.

- Curriculum design, content and review;
- Teaching, learning and assessment methods;
- Quality of students including student progress and achievements;
- Extent and use of student feedback (both qualitative and quantitative);
- Postgraduate studies;
- Peer observations;
- Skills development;
- Academic guidance and counseling.

### 4.1 Curriculum Design, Content and Review

***Strengths/Good Practices in Curriculum Design, Content and Review Aspect***

- University of Moratuwa has changed its curriculum program from full academic year of three terms to a program with two semesters plus a "Skills Development" term (June Term) from year 2000 onwards. [Sources: Self Evaluation Report (SER)]
- Subsequent to the above, and as a result of it, the previous curriculum has been changed. The current curriculum of the BSc Engineering programmes two areas of specialization; viz. Textile Process Engineering and Apparel Manufacture. The primary objective of the Textile & Clothing Engineering programme offered by the Department is to impart a strong theoretical foundation in the science of engineering focusing on Textile & Apparel Technology, supported by a sound practical

knowledge base gained through the Industrial Training Programme. The programme structure enables a graduate of the Department to easily fit into diverse fields of engineering and into the managerial functions of the Industry. [Sources: SER, HD presentation and discussion with academic staff]

- Major revision to the program modules done once in four years; the last such revision being done in 2005. Minor revisions in the form of adding, removing and updating subjects are done almost every year. [Sources: SER, HOD's Presentation, Discussion with academic staff]
- Most of the curriculum innovations are based on the feedback the department receives from the industry and its own staff members who rejoined the department after completing their higher studies. An Industry Consultative Board (ICB) has been established in order to obtain advice and guidance on the design and improvements to the curriculum from senior professionals in industry. [Sources: SER, Minutes of ICB, Discussion with academic staff]
- Incorporation of industrial visits once a year to give students an exposure to real world of work; is also observed to be a good practice. [Sources: SER, Discussion with Staff and Discussion with Students]
- The Department is in the process of expanding the curriculum to strengthen management and marketing course modules especially designed for the future post-quota era. The latest computer aided engineering software packages are introduced to the students in order to facilitate their use in laboratory and assignment work. Whenever possible, the Department has taken necessary steps to upgrade the existing software and introduce new software, which can handle the latest innovations in design and management areas of the industry. [Source: SER, Discussion with Staff]
- The department, in the future, envisages to revise the curriculum, incorporating new streams such as Textile Manufacture, Textile Processing, Apparel Manufacture, Apparel Merchandising etc. [Source: SER, HOD's Presentation, Discussion with Academic Staff]
- The curriculum of the department aims at obtaining accreditation from the Institute of Engineers Sri Lanka. It has already obtained the accreditation of the Textile Institute – United Kingdom in 1996. [Source: SER, HOD's Presentation, Discussion with Academic Staff]

***Weaknesses/Things that need consideration in Curriculum Design, Content and Review Aspect***

- Though the curriculum of the department has obtained the accreditation of the Textile Institute – UK, it was noted that this has lapsed now. It is recommended that department applies for accreditation again. [Source: Discussion with Staff]
- Though the Department offers two specializations in Textile Process Engineering and Apparel Manufacture it was noted that the difference between the lists of subjects that can be taken by students, when considering the optional courses, is not significant. However, the department plans to address this issue when the next major revision is done. [Sources: SER, HOD's Presentation, Discussion with Academic Staff and Discussion with students.

- In certain modules there is an overlap in the subject content. However, this is being addressed by the department. [Source: Meetings with the Students, Meeting with the Academic Staff]

***On the basis of these observations, the review team agrees that the Curriculum Design, Content and Review aspect is GOOD.***

### 4.2 Teaching, Learning and Assessment Methods

***Strengths/Good Practices in Teaching, Learning and Assessment Methods***

- Teaching and learning are carried out through a combination of methods such as lectures, tutorial assignments, practical classes, industrial visits, mini projects, presentations, industrial training, spot quizzes, etc. [Sources: SER, Discussions with students and staff]
- The module assessment method consists of continuous assessment (CA) and end-of semester examination. By setting a criterion for each course module, taking in to consideration the weight of its components such as labs, tutorials, assignments etc. to get the eligibility for sit for the end-of-semester exam, the students are continuously monitored right throughout the semester. It was noted that from 30 to 50% of the continuous assessment marks are included in the overall mark of the students, which is a very good practice. [Sources: SER, HOD's Presentation, Discussion with Academic Staff and Discussion with students]
- The marks of the continuous assessments are given to students before the final examinations are held, thus enabling the student to plan his studies for examinations in an effective way. [Source: Discussion with Academic Staff]
- Considerable amount of laboratory classes and practical sessions are included in the teaching methodologies which allow the students hands on experience. [Sources: SER, Discussion with Academic Staff and Discussion with students, Visits to the laboratories]
- Industrial training for 6 months given at level 3 is found to be an essential and important component of the program. [Sources: SER, HOD's Presentation, Discussion with Academic Staff and Discussion with students]
- Level 4 comprehensive project is found to be a good opportunity for the application of learnt theories in the field of electrical engineering [Sources: Final year project reports, Discussions with staff]
- The review team witnessed the availability of computers in the department for student usage. This facility is expected to enhance student's self-learning abilities. However, since the available computer terminals are limited, students face hardship and inconvenience due to this. [Sources: Visit to the Computer Labs, Discussion with students]
- Use of multi-media in lecture rooms and laboratory classes is commendable. It is observed that students are motivated by giving exercises in the classes. [Sources: Visit to the Lectures and Lab classes]

- It was noticed that the students who missed the laboratory classes are given additional time at the end of the semester to complete the lab classes they have missed. [Sources: Visit to the Lectures and Lab classes]
- Learning outcomes and course outlines of each course is given to the students at the beginning of the Semester [Source: Meetings with the Students, Meeting with the Academic Staff]

***Weaknesses/Things that need consideration in Teaching, Learning and Assessment Methods***

- Insufficient laboratory space to carry out practical classes for large groups of students. [Sources: Visit to the laboratories, Discussion with Academic and Academic Support staff]
- Insufficient laboratory equipment leading to large number of students in one group. [Sources: Visit to the laboratory classes, Discussion with Academic and Academic Support staff]
- Lack of instructors in the department has put a fairly heavy load on the academic staff. It is recommended that the department should be provided with adequate numbers of instructors to help conduct the laboratory practical classes. [Sources: Visit to the laboratory classes, Discussion with Academic staff]
- Insufficient class room sizes resulting in crowded class rooms. Class rooms designed for 35 students are now being used for students in excess of 50. [Source: Visit to the Lectures]
- Limited access to computer facilities and the internet. It is suggested that the computer facility which is situated in the library and which is under the administration of the computer section be opened for extended period of time. Now it closes at 1615 hours, and when the reviewers visited the facility it was already closed, whereas the computer facility which is situated in the library and which is under the administration of the library is kept opened till late. It is also recommended that the computer lab in the department which is closed during the lunch time be kept opened during the lunch hour too. [Sources: Visit to the library, computer facility, Discussion with Academic and Academic Support staff, Discussion with students]
- Students undergoing training for the first time undergo a “cultural shock” as the environment at the factory is completely alien to them. However, this is rectified from this academic year with the department incorporating a two-week refresher programme in the factories for all the new entrants, commencing this year. The review team suggested that this opportunity be extended to Level 2 and 3 students as well. [Sources: Discussion with Academic staff, HOD’s Presentation, Discussion with the students]
- The student work load is observed to be reasonable especially in the first year (10-12 credits) owing to the sudden change in learning environment from school to the university (and medium of instruction from vernacular to English). However, improvement in workload in the rest of the semesters may be adjusted a little to give a reasonably distributed work load. [Sources: Discussions with students and staff, DTC handbook]

- It was noted that most teachers have not undergone teacher training and it is suggested this aspect need consideration of the department. [Sources: Discussions with staff]
- Though in the past the department has appointment external examiner for the various modules offered, after the introduction of the semester system this practice has not been followed for want of time. It is recommended that the department restarts this procedure as per the university guide lines. [Sources: Discussions with staff, Faculty memo]

***On the basis of above observations and considering that many of the weaknesses are outside the control of the department, the review team opines that the Teaching, Learning and Assessment aspect could be considered as GOOD.***

### 4.3 Quality of Students, Including Student Progress and Achievements

***Strengths/Good Practices in the Quality of Students, including Student Progress and Achievements aspect***

- Students are given two weeks of time to add / drop courses in the beginning of the semester. This helps the student to assess the content and the commitment s/he needs to put into the course thus enabling her/him to plan the progress in the semester that is ahead. [Source: Discussions with staff]
- Student enrolment into the Textile and Clothing stream is direct, based on the Z scores obtained by the students in the GCE (A/L) examinations. It was noted that in most instances Textile and Clothing has been the First or Second choice of the students. [Sources: SER, Discussion with the Students]
- DTC has won the Manamperi Memorial Award in year 2003. [Source: SER]
- Most, if not all the students who complete the degree, are immediately employed in the industry. Some of the graduates get more that one employment offer. One of the reasons for this may be dearth of qualified personnel in the garment industry which is the largest manufacturing sector in Sri Lanka. [Sources: Records of Students Performance – Progress Semester Exam Marks and GPA, Discussion with the Students]

***Weaknesses/Things that need consideration in the Quality of Students, including Student Progress and Achievements aspect***

- The statistics shown in the SER provided by the DTC (section 5.4) suggests that only about 50% of the students obtain classes. Though, this is commendable performance it should be further improved. From the information provided by the DTC on students' performance, it is also noted that the number of students obtaining First Classes are not satisfactory. [Sources: SER, Discussion with the Students, Documents on Students Performance – Progress Semester Exam Marks and GPA]
- It was noted that in the last batch (2001 intake) that passed out 21% (10 out of 48) of the students did not complete the degree in the minimum duration of four years. As the performances in the previous years are comparatively better, it is recommended that the department undertakes a study to investigate the reasons for such a

performance by this particular batch. [Source: Records of Students Performance – Progress Semester Exam Marks and GPA]

- It was observed that the selection procedure of students between the two programmes offered by the Department (the design programme and the engineering programme) is different. Due to this difference in the quality of students, it was noted that interaction and cohesiveness between these two groups of students is not satisfactory. It is recommended that the department take necessary steps to address this issue so that the department could function as an integral unit and achieve greater success. [Sources: Discussion with the HOD, Academic Staff, Academic Support Staff, Observations by the Review Team]

***On the basis of these observations, and taking note that students are readily employed mainly due to the great need of qualified personnel in the apparel industry, the review team is of the view that aspect concerning the Quality of Students, including Student Progress and Achievements is SATISFACTORY.***

### 4.4 The Extent and Use of Student Feedback

***Strengths/Good Practices in the Extent and Use of Student Feedback***

- The DTC has developed a set of questionnaires; to get the student feedback with regard to the lecturer performance and also about the content of the course module at semester intervals. Qualitative student feedback is obtained by informal discussions between students & level coordinators and Informal discussions between students & academic advisors. [Sources: SER, Discussion with the Students, Academic Staff, Level Coordinators and Student Counselors]
- The response received from the students is processed and analyzed by the department in various ways both quantitatively and qualitatively is used to adjust the performance accordingly for the next semester and so on. [Sources: SER, Discussion with the Students, Academic Staff, Level Coordinators and Student Counselors]
- It was noted that the staff are keen and willing to obtain feedback from students and make necessary changes to relevant aspects in the curriculum, teaching methodology, etc. [Source: Discussion with Academic Staff]

***Weaknesses/Things that need consideration in the Extent and Use of Student Feedback aspect***

- It is noted that the meetings with the students and level coordinators is done informally. It is recommended that these meetings be formalized. [Sources: Discussion with the Students, Level Coordinators and Student Counselors]
- It is noted that visiting lecturers are evaluated by the students only at the end of the semester. It is recommended that feedback from students on visiting lecturers must be obtained earlier in the semester so that any remedial actions can be taken immediately. [Sources: Discussion with the Students, Level Coordinators and Student Counselors]
- Currently the student feedback forms are distributed and collected by the lecturer concerned himself/herself. It is recommended that in order to obtain more reliable

feedback this must be dome by the HOD or by an independent body in the department or university. [Source: Discussion with Academic Staff]

***On the basis of these observations, the review team concludes that aspect on the Extent and Use of Student Feedback is GOOD.***

### 4.5 Postgraduate Studies

***Strengths/Good Practices in Postgraduate Studies aspect***

- It is noted that the Department offers Postgraduate taught courses and Postgraduate research degrees as specified in page 29 of the SER. These are the Doctor of Philosophy Programme, Master of Philosophy Programme, Master of Science Programme, Master of Science Programme with major component of Research and the PG Diploma programme. The Doctor of Philosophy Programme, the Master of Philosophy Programme and the Master of Science Programme with major component of Research can either be done on a full-time basis or part-time basis. This gives wider flexibility and choice to students who like pursue higher degrees. [Sources: SER, HOD's Presentation, Discussion with the Postgraduate Students, Discussions with Academic Staff]
- Quality and availability of staff to conduct and supervise postgraduate studies is satisfactory. [Sources: SER, Discussion with the Postgraduate Students, Discussions with Academic Staff]
- Adequate laboratory facilities and assistance from the technical staff are available in the department. [Sources: Discussion with the Postgraduate Students, Discussions with Academic Staff, Discussion with academic support staff]
- Funds to perform postgraduate research are accessible with availability of Faculty Research Funds and other outside funding resources. [Source: Discussion with the Postgraduate Students]
- The library has adequate books and other resources to perform research. It also has subscribed to number of research databases, including Science Direct, through which research literature could be accessed. Further, library has inter-library loan facilities through which resource materials available in the libraries of other universities in Sri Lanka could be obtained. [Sources: Discussion with the Postgraduate Students, Discussions with Academic Staff, Discussion with the Librarian, Observation of facilities in the library]

***Weaknesses/Things that need consideration in Postgraduate Studies***

- As undergraduates are easily employable, there is no incentive for postgraduate studies among the employed graduates. [Source: Discussion with Academic Staff]
- As the industry is hard pressed employed students find extremely difficult to find spare time to do their postgraduate studies. [Source: Discussion with Academic Staff]
- Due to the UGC/University procedures, postgraduate students do not have the facility to enter the laboratories, unless the technical officer is available. This is a great impediment for research students. It is suggested that the Department must set up a separate research lab for research activities so that the students would have

unrestricted access to do their research. However, lack of space in the current building is noted by the review team. It is suggested that the department explore the possibility of extending the existing building or put up a new building to ease the congestion of space in the existing building. [Sources: Discussion with the Postgraduate Students, Discussions with Academic Staff, Discussion with academic support staff, Observation of the Facilities available by the review team]

***On the basis of these observations, the review team determines that aspect pertaining to Postgraduate Studies is GOOD.***

### 4.6 Peer Observation

***Strengths/Good Practices in Peer Observation aspect***

- The DTC carries out Peer observation to supplement the feedback obtained from students. The DTC academic staff arranges and carries out peer observation at least once a semester. [Sources: SER, Peer evaluation sheets (2005/2006)]
- Each staff member has one or two colleagues sitting in on his/ her lecture or laboratory class and observing the way the class is conducted. After the class the observer and the lecturer will meet and exchange notes, and feedback will be given both verbally and by means of a standard form. [Source: SER]
- The staff members of DTC meet in the least once a semester to discuss the learning, teaching and assessment methods, problems encountered and new developments to lift the standards of teaching, to enhance the overall quality level of the students. [Source: Discussion with Academic Staff]
- Several DTC staff members have followed a course in teaching conducted by the Centre for Learning and Teaching in Arts and Design, London, for which the external resource person has reviewed each staff member during her visits to Sri Lanka. Another member of the staff has undergone a UK accredited teacher training course in the University of Colombo, and as part of that course has obtained peer review from staff members of other departments. [Source: SER]
- The peer review process is firmly in place and the concept is accepted by the staff members who are willing to practice it. [Sources: SER, Discussion with Academic Staff, Peer Evaluation sheets]

***Weaknesses/Things that need consideration in Peer Observation aspect***

- The formal peer review process has started recently, so the reviewers have to be trained to give a complete assessment. [Sources: Discussion with Academic Staff, Peer Evaluation sheets]
- The review panel feels that the reviewer comments can get more informative, as the process goes on for another few semesters. [Source: Analysis of completed peer evaluation sheets]
- At present only the internal staff members are subjected to peer-review. It is recommended all the staff, including the visiting staff be reviewed. [Source: Discussion with Academic Staff]

***On the basis of these observations, the review team consents that Peer Observation aspect is GOOD.***

### 4.7. Skills Development

***Strengths/Good Practices in Skills Development***

*Language and Communication Skills*

- DTC strives to improve the language and communication skills of the students considering the multicultural nature of our society, the interactions the DTC graduates will have with foreign companies and the fact that after graduation proficiency in English plays a vital role in determining the employability and adaptability of the graduate in industry. [Sources: SER, Discussion with Academic Staff, Discussion with Students]
- In present university education system, students give priority to improve their technical skills while language and communication skills get much less attention than they deserve, and are often neglected to the long-term detriment of the student. DTC students are encouraged to improve language and communication skills using a mix of both formal & informal interactive teaching methods that are attractive and enjoyable. [Sources: SER, Discussion with Academic Staff, Discussion with Students]
- In the UoM each student has to follow a comprehensive preparatory English language course prior to the commencement of the undergraduate programme. The English Language Teaching Centre (ELTC) also conducts English classes for the students during their academic year. In Level 1 of the B.Sc. Engineering course, English (DE101) and English Certificate Course (DE102) are offered by the ELTC. In 2006 the ELTC on the request of the DTC commenced a special course for students who had expressed the need for such a course to improve their English proficiency. [Sources: SER, Discussion with an academic member of ELTC]
- With the British Council the DTC has also organized a special course to develop the English skills of the students. Some members of the staff were trained on this programme, which was sponsored by the industry. The students are encouraged to improve their skills in the National languages Sinhala/Tamil in addition to improving their English [Sources: SER, Discussion with Academic staff]

*Report writing & presentation skills*

- Report-based assessment is carried out at various stages of the degree programme. Students have to submit course work after every practical session, and assignments for continuous assessments. In addition reports have to be submitted at the end of the industrial training period and for the final year project, which are comprehensive documents which enable the student to develop report-writing skills and improve the standard of English. [Sources: SER, HOD's Presentation, Discussion with Academic staff]
- During the Level 1 Design Project presentation and the Level 4 Project presentations, and oral presentations in some regular courses; the students get further opportunities

to develop and display their presentation skills. [Sources: SER, HOD's Presentation, Discussion with Academic staff]

*Design Skills/Group Working Skills*

- The DTC encourages the students for group work, as team-working skills are of paramount importance in the garment industry. Group practical sessions, Level 1 design project and Level 4 projects enhance development of these particular skills. However students are assessed individually through viva-voce examinations. During the industrial training period the training establishments are encouraged to give the trainees group projects to enhance their ability to work in a team. [Sources: SER, Discussion with staff and students]
- During the June term of the first year (Level 1) students handle a design project (Skill development Project - TT196). The students submit a report and do a presentation. [Source: SER]
- In the final year (Level 4) of the program final year students carry out a group design project. A group consists of 4 to 5 students. Most of the projects are carried out in collaboration with the Textile & Garment industry. Students are advised to identify projects during their industrial training period. Those who succeed in identifying problems often study them as their final year project. A few projects are carried out directly using the university resources. All these projects are geared to bring the students' design skills to the fore. [Sources: SER, Discussion with staff and students]

*Management Skills*

- At Levels 2, 3 and 4 of the programme, specific subjects viz. Elements of Production Management (TT208), Organizational Management (MN301), Financial Management and Accounting (MN302), Human Resource Management (MN403), Operations Management in Clothing (TT409), Technology Management (MN404), Quality Control and Management (TT410), Production Organization & Management (TT407) and Environmental Management (TT411) are included to impart to the students the skills of management, law and finance. [Sources: SER, HOD's Presentation]

*Information Technology Skills*

- Information technology (IT) skills are introduced through special modules. The basic IT skills are taught in Computer Systems (CS101) and continued in Computer Applications (CS102). The Skill Development Project (TT196) and Visual Programming (CS281) in Level 2 help equip the students with essential IT skills useful in their career. These skills include the principles of computer programming and the use of various packages in a scientific manner. Students are given the opportunity to utilize and develop these skills even in the assignments given in other modules of their course, and in their Level 4 project (Source: SER, lab visits and discussion with staff). In addition to the above, the DTC has developed two special subjects to teach students IT related skills specific to the textile and garment industry, namely Information Systems in Textile & Clothing (TT423) and CAD in Apparel Product Design (TT325). [Sources: SER, HOD's Presentation, Discussion with Academic staff]

*Further Development of skills related to the World of Work*

- The Apparel Manufacturing Business (TT323) module involves a major component of industrial visits. Industrial Visits are arranged so that students develop the attitude and skills to fulfil the needs of the industry while they are still within the classroom environment. They are exposed to industry culture and the atmosphere of the industry. These visits also aim to provide students with real-life exposure to machinery, processes and systems, which cannot be demonstrated within the University. [Sources: SER, Discussion with Academic Staff and Students]
- Since over 500 graduates of the DTC are now a part of the industry, the visits are undertaken to factories where DTC alumni are already employed. The visits are planned so that different factories will be covered during the year, giving the students exposure to different sectors of the industry. The sectors covered will be related to the subject matter being covered during the relevant semester. For each visit a coordinator is chosen from the academic staff to liaise with the factory to be visited. The student representative will coordinate student participation. At the end of the visit the students are required to face an assessment of the visit, either by a written report, or an oral examination, which will count towards their continuous assessment marks. Students may also be asked to submit their evaluation of the visit, which will be used to give feedback to the factory if necessary, and to plan future visits. [Sources: SER, Discussion with staff and students]
- The DTC invites senior professionals from the industry to address the students once a month. These lectures are conducted with help of Moratuwa University Textile Association (MUTA). The topics of these guest lectures extend far beyond the curriculum focus and are intended to develop professionalism of the students. Students are encouraged to enhance their social and interactive skills by means of several programs designed for this purpose. At the beginning of their orientation to the Department the students are exposed to a variety of exercises designed to enhance their interaction with each other. A special induction program organized prior to industrial training orient students towards interacting in a work culture. The annual Textile Day has helped to bring students to work together to present a program of high quality, regardless of their background. [Sources: SER, HOD's Presentation, Discussion with Academic staff and Students]
- Various aspects of skills development (described above) give good attention ensuring that the graduate of DTC is ready for the industry and the society. Course units are developed to emphasize various skills.

***Weaknesses/Things that need consideration in Skills Development***

- In the discussion with students, the problems they have with English language were mentioned, but they carry on determined to overcome such problems. Yet this problem is common to the whole University system. Students also raised the question that some of the machines available are fast becoming obsolete, but this is remedied to a certain extent in Industrial training and Industry visits. The students expressed the wish to have short one-two week industry mentoring programs regularly for all batches. [Sources: Discussions with Academic staff and Students]

***On the basis of these observations, the review team concurs that Skill Development aspect is GOOD.***

### 4.8. Academic Guidance and Counseling

**Strengths/Good Practices in Academic Guidance and Counseling**

- Academic guidance is provided to students in many ways. Induction programmes are held for the students at the beginning of their course and at the time of selection of specialization. Guidance is also provided immediately prior to the industrial training period. An overall briefing and introduction is given at the commencement of each academic year. Course outlines and information about support for each module is conveyed to the students at the beginning of each semester. Pre-requisites and learning objectives are clearly spelt out, together with the required reading lists and web links. Day-to-day arrangements are communicated through notices on the notice boards, by email and on the Department webpage. [Source: SER, HOD's Presentation, Discussion with Academic staff, Student counsellors and Students]
- Written and verbal feedback is given to students on the laboratory work and assignments helping them to improve the quality of their work. [Sources: SER, Discussion with Academic Staff and Students]
- Guidance is given to students by seniors and by alumni on matters related to academic work and future in the industry. A successful mentor program was conducted with the help of the Rotary Club. [Sources: SER, Discussion with Academics and Students]
- One of the DTC's Senior Lecturers is the University Chief Student Counsellor. Two other academics serve as student counsellors, handling grievances of students and provide necessary advice as appropriate. [Sources: SER, Discussion with counsellors]
- Students who have mental disorders are identified and those who need psychiatric treatments are referred to a psychiatrist. The academic counsellor also simultaneously discusses with the student and observes his/her progress. He maintains the confidentiality of the services he provides. Most of the professional guidance on personal problems of the students is given by the academic counsellor. If s/he is unable to find a solution, then the students are referred to the Professional Counsellor in the University Counselling Unit. [Sources: SER, Discussion with counsellors]
- In addition to the above the academic staff is available to counsel students when needed. All staff members are made aware of the support services available, and direct the student as necessary. Students are also encouraged to take their academic problems to their Level Coordinators and their personal problems to trusted members of staff. The DTC plans to reintroduce the scheme of personal tutors (personal advisors) in the near future. [Sources: SER, Discussion with counsellors, Discussion with academic staff]
- Students have good rapport with staff and they can walk-in with their problems to meet professionally qualified counsellors. Transport is given for funerals and the faculty has supported students' hospital bills. The Textile Day once a year gives the students an opportunity to informally mix with the Staff members. [Sources: SER, Discussion with counsellors, Discussion with academic staff and students]

***Weaknesses/Things that need consideration in Academic Guidance and Counseling***

- The absence of personal tutors is noted but according to DTC this will be remedied soon. At present, the level-coordinator signs the course forms and add/drop forms of the whole batch. This can be decentralized to the personal tutors giving them a chance to interact more closely with students under their care [Source: Discussion with counsellors, Discussion with academic staff and students]

***On the basis of these observations, the review team is in agreement that Academic Guidance and Counseling aspect is GOOD.***

## 5. CONCLUSIONS

**Curriculum Design, Content and Review:** The Faculty Curriculum Development Committee had revised the curriculum every 4 years since 1990. Past students' views were also taken into account in the curriculum review. The last curriculum review was done in 2004. Review team is satisfied with the development shown in this aspect. *Judgment: Good*

**Teaching, Learning and Assessment Methods:** A number of teaching methods are used and the courses are taught mainly by lectures, laboratory work, discussions etc. Assessment of all the courses has been done uniformly throughout the Faculty. To further improve the teaching and learning process it is recommended that better computer and laboratory facilities are provided. It is also recommended that external examiners be used for moderating the final examination papers. *Judgment: Good*

**Quality of Students, Including Student Progress and Achievements:** According to the available statistics, about 50% of the students obtain classes. Further, number of students obtaining first class is marginal. It is also noted that considerable percentage of students, do not complete the degree in the minimum duration of four years. Even though it is noted that a student of the DTC has won the Manamperi Memorial Award in year 2003, overall it is recommended that Department takes necessary actions to improve student progress and achievements. *Judgment: Satisfactory*

**Extent and use of Student Feedback, Qualitative and Quantitative:** The teacher evaluation by students is implemented on a regular basis at present. To further improve the process it is recommended that visiting lecturers be evaluated at the beginning of the semester. It can be concluded that the students' feed back has been effectively used in the Department. *Judgment: Good*

**Postgraduate Studies:** At present, the DTC conducts PG taught courses and postgraduate research degrees as specified in page 29 of the SER. These are the Doctor of Philosophy Programme, Master of Philosophy Programme, the Master of Science Programme and the PG Diploma programme. Currently ten students are registered for the postgraduate programmes. Considering the constraints faced by the graduates in the

textile and apparel industry this is considered to be a satisfactory number. *Judgment: Good*

**Peer Observation:** The peer review process is firmly in place as elaborated in section 4.6 and the concept is accepted by the staff members who are willing to practice it. J*udgment: Good*

**Skills Development:** Various aspects of skills development, as described in section 4.7., give good attention ensuring that the graduate of DTC is ready for the industry and the society. *Judgment: Good*

**Academic Guidance and Counseling:** Students have good rapport with staff and they can walk-in with their problems to meet professionally qualified counsellors. Academic guidance is provided to DTC students in many ways. Also guidance is given to students by their seniors and by alumni of the DTC on matters pertaining to their academic work and future in the industry. One of the DTC's Senior Lecturers is the University Chief Student Counsellor. Two other staff members also serve as student counsellors in the University. In addition, there are other facilities made available as shown in section 4.8. *Judgment: Good*

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

| **Aspect** | **Judgment** |
|---|---|
| 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 | Good |
| Postgraduate studies | Good |
| Peer observation | Good |
| Skills development | Good |
| Academic guidance and counseling | Good |

## 6. RECOMMENDATIONS

Based on the findings indicated above, the review team wishes to make the following specific recommendations.

- In most of the aspects the review team found the way things are done at the DTC are commendable. While sharing the lack of funds and other problems inherent to all the Sri Lankan universities, the high morale and positive attitude of the staff should be commended.
- To further improve teaching and learning process it is recommended that better computer and laboratory facilities are provided.
- It is also recommended that additional building space be provided for the department to continue to provide the services they provide to the students and industry more effectively.
- It is also recommended that the academic staff be provided with instructors to help them in the laboratory activities.
- It is recommended that the university takes action to enhance hostel facilities for students.
- It is recommended that the library facilities to students be given even during the industrial training period
- It is recommended that the computer centre be opened for an extended period of time
- It is recommended that the medical centre be opened for an extended period of time, including lunch hours.

## 7. ANNEXURES

### ANNEX 1: AGENDA OF THE THREE DAY VISIT

**Wednesday (19 July 2006)**

0900 – 0930 Welcome Meeting with the Dean and Head of Department
0930 – 1000 Discuss the Agenda of the Review
1000 – 1030 Tea Break
1030 – 1130 Department Presentation on the Self Evaluation Report
1130 – 1200 Discussion
1200 – 1300 Lunch Break
1300 – 1330 Discussion
1330 – 1400 Observe Teaching a Class 1
1400 – 1600 Observe Teaching a Practical Class 1,2,3
1600 – 1700 Meeting with the Students

**Thursday (20 July 2006)**

0900 – 1030 Observe Teaching a Class 2, 3
1030 – 1130 Meeting with the Academic Staff
1130 – 1200 Observe Departmental Facilities
1200 – 1230 Meeting with Postgraduate Students
1230 – 1330 Lunch Break
1330 – 1430 Meeting with Academic support Staff
1430 – 1500 Observe Teaching a Practical Class 4
1500 – 1600 Observe Departmental Facilities
1600 – 1700 Observe Other Facilities
1700 – 1730 Brief Meeting of the Reviewers

**Friday (21 July 2006)**

0900 – 1000 Observe Documents
1000 – 1030 Academic Guidance and Counseling Core Aspect Meeting
1030 – 1100 Reviews Private Discussion (Working tea)
1100 – 1200 Meeting with Head & Staff for Reporting
1200 – 1300 Lunch Break
1300 – 1700 Reporting Writing

## ANNEX 2: PERSONS MET DURING THE VISIT

**Academic Staff**
Prof. AKW Jayawardene, Dean, Engineering.
Dr. Sandun Fernando
Dr. WDG Lanarolle
Dr. GLD Wickramasinghe
Mr. DPD Dissanayake
Mr. SN Niles
Dr. Nilanthi Heenkende
Mrs. VS Ratnayake
Dr. TSS Jayawardena
Dr. Nirmali De silva
Dipl. Ing. NL Wanigatunga
Mrs. Samudrika Wijayapala

**Academic Support Staff**
Mr. HM Senevirathne
Mrs. YP Rajapakse
Mr. CP Malalanayake
Mr. JA Chinthaka
Mr. D Jayasiri
Mr. HS Soysa
Mr. SWNA Samaraweera
Mr. P Sarath Gomes
Ms. I. Shashika Disapali
Mr. W Chandradasa
Mr. MGN Peiris
Mr. JP Sanjeewa Silva
Ms. TV Tharaka Dushanthi Perera
Mrs. DMDS Dissanayake
Mr. GHD Wijesena
Mrs. Kusum Kapuruge

**Postgraduate Students**
Mr. TMJA Cooray
Ms. R Mataraarachchi
Ms. VS Ratnayake
Ms. Samudrika Wijayapala

**Also 37 undergraduates of the BSc Engineering programme of the DTC took part in the discussion with the QA team.**

## ANNEX 3: LIST OF TEACHING SESSIONS OBSERVED

**19 July 2006**

- Lecture (TT308 – Apparel Production Management, Level 3 Semester 1, Dipl.Ing. NL Wanigatunga)
- Practical (TT310 – Fabric Formation, Level 3, Semester 1, Dr. S Fernando)
- Practical (TT311 – Pneumatics, Level 3, Semester 1, Dr. TSS Jayawardena)
- Practical (TT306 – Testing and Evaluation of Textile Materials, Level 3, Semester 1, Mr. SN Niles)

**20 July 2006**

- Lecture (TT214 Principles of Clothing Manufacture, Level 2, Semester 1, Ms. VS Ratnayake)
- Lecture (TT306 Testing and Evaluation of Textile Materials, Level 3, Semester 1, Mr. SN Niles)
- Practical (TT311 – Pneumatics, Level 3, Semester 1, Dr. TSS Jayawardena)
- Practical (TT310 – Fabric Formation, Level 3, Semester 1, Dr. WDG Lanarolle)

## ANNEX 4: LIST OF FACILITIES OBSERVED

- Lecture Theatres
- Laboratories (Clothing, Design, Weaving, Knitting, Physical Testing, Wet Processing,
- Spinning, Pneumatic, Computer)
- Office Space and Staff Rooms
- University Library and Computer Centre
- Department mini library
- Bookstores and Photocopy Facilities
- Canteen Facilities

## ANNEX 5: LIST OF DOCUMENTS OBSERVED

- Performance criterion for B.Sc. Engineering degree program
- Detailed Syllabi of the Course Units conducted by the Department for four levels
- Minutes of the Departmental Meetings and the Minutes of the Curriculum Development Committee Meetings
- Past Question Papers, Marking Schemes, Final Year Students' Project Reports, Students' Practical Record Books
- Teaching Material (lecture notes and practical handouts)
- Summaries of the Teacher Evaluations by the Students and the Related Forms
- Summaries of the surveys conducted by the Department
- Industry consultative board meeting minutes.
- Minutes of the Batch Representatives
- Peer observation checklist
- Minutes of the meetings of the Head of the Departments
- Workloads of Academic Staff
- Semester Plan of the programmes
- Training Placements of BSc Engineering students in Level 3
- Training evaluation forms