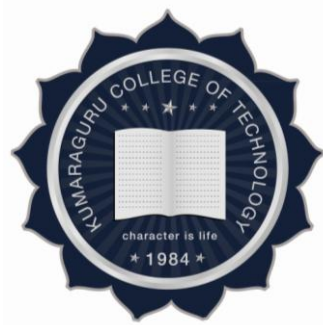


**KUMARAGURU COLLEGE OF TECHNOLOGY,
COIMBATORE – 641 049**

REGULATIONS 2014


CURRICULUM AND SYLLABUS



IIIrd - VIIIth Semesters

B.Tech. FASHION TECHNOLOGY

Department of Fashion Technology


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KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE - 641 049.

REGULATIONS 2014

**B.E. / B. Tech Programmes
CREDIT BASED SYSTEM (CBS)**

These regulations are applicable to students admitted into B.E. / B. Tech Programmes from the academic year 2014 – 2015.


Preamble

India has become a permanent member of Washington Accord. As an educational institution we are adopting the “Outcome Based Education (OBE) Process” to ensure that the required outcomes (knowledge, skills and attitude / behavior) are acquired by the learners of a programme. With the OBE process in mind, our educational system has been framed to provide the needful scope for the learners through the CBS that will pave the path to strengthen their knowledge, skills and attitude / behavior.

The CBS offers flexibility to learners which include large number of electives, flexible pace for earning credits and audit courses.

The Objectives of CBS

- To offer the right blend of Core, General, Engineering Sciences & Technical Arts and Basic Science courses to facilitate the learners to acquire the needful outcomes.
- To facilitate students to earn extra credits.
- To elevate the level of knowledge, skills and attitude/behavior on par with the students across the globe.
- To offer programmes in an academic environment with purpose, the needful foundations, breadth (exposure for optimal learning) and professionalism.


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1. Definitions and Nomenclature

1.1 University

University means the affiliating university, ANNA UNIVERSITY, CHENNAI

1.2 Institution

Institution means KUMARAGURU COLLEGE OF TECHNOLOGY, Coimbatore, an autonomous institution affiliated to Anna University, Chennai

1.3 Head of the Institution

Head of the Institution means the Principal of the institution who is responsible for all academic activities and for the implementation of relevant rules of this regulation.

1.4 Programme

Programme means Degree Programme i.e., B.E / B. Tech Degree Programme.

1.5 Branch

Branch means specialization or discipline of B.E / B. Tech Degree Programme, such as Civil Engineering, Textile Technology, etc.

1.6 Course


Every paper / subject of study offered by various departments is called a course. (e.g. Operations Research)

1.7 Curriculum

The various components / subjects / papers studied in each programme that provides appropriate outcomes (knowledge, skills and attitude/behavior) in the chosen branch is called curriculum.

1.8 Credits

Course work is measured in units called credit hours or simply credits. The number of periods or hours of a course per week is the number of credits for that course.


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The details of credit allocation is given in Table 1.

Table 1

Nature of the Course	Hours per Week	Credits
Theory	3	3
	3+1 (Theory + tutorial)	4
Laboratory	2 or 3	1
Special Laboratory	4 to 6	2
Theory + Laboratory	2 (Theory) + 2 or 3(Laboratory)	3
Theory + Laboratory	3 (Theory) + 2(Laboratory)	4
Project Work (Eighth Semester)	18 (Minimum)	6

1.9 Total credits

The total number of credits a student earns during the course of study period is called the total credits. A Student must earn **185 – 190** credits (varies with the branch) for successful completion of the B.E. / B. Tech regular programme (**Eight** semesters) and **138-140** credits for lateral entry (**Six** semesters).

2. Admission


2.1 First Year B.E. / B. Tech and Lateral Entry

The norms for admission, eligibility criteria such as marks, number of attempts, physical fitness and mode of admission will be as prescribed by the University.

2.2 For students readmitted from **2009** Regulations and **2013** Regulations (due to discontinuation for different reasons) **to 2014** regulation, a normalization(equivalent) course committee will be constituted by the Principal to decide the Courses exempted and additional Courses to be appeared by the concerned student.

3. Branches of Study

The following branches of study approved by the University are offered by the institution.


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B.E. Degree Programmes

- Aeronautical Engineering
- Automobile Engineering
- Civil Engineering
- Computer Science and Engineering
- Electronics and Communication Engineering
- Electrical and Electronics Engineering
- Electronics and Instrumentation Engineering
- Mechanical Engineering
- Mechatronics Engineering

B.Tech Degree Programmes

- Biotechnology
- Information Technology
- Textile Technology
- Fashion Technology

4. Curriculum Structure

4.1 According to the National Board of Accreditation (NBA), India, for each undergraduate (UG)

Programme, the curriculum has to be evolved after finalizing the Programme Educational Objectives (PEOs) and the corresponding Programme Outcomes (POs). The POs are to be specifically evolved by referring to the twelve Graduate Attributes (GAs) listed by NBA for undergraduate programmes. The curriculum that evolves should broadly ensure the achievement of the POs and thus the PEOs of the programme.

4.2 All India Council for Technical Education (AICTE), New Delhi in its “Model scheme of instructions and syllabus for UG engineering degree programmes” published during October 2012 has prescribed the following curriculum structure for UG E&T degree programmes.

S.No	Course Work – Subject Area	Range of Total Credits (%)		Suggested Breakdown of Credits (for total = 176) (No.)
		Minimum	Maximum	
1.	Humanities and Social Sciences (HS) including Management;	5	10	14
2.	Basic Sciences (BS) including Mathematics, Physics, Chemistry, Biology;	15	20	30
3.	Engineering Sciences (ES), including Materials, Workshop, Drawing, Basics of	15	20	30



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	Electrical/Electronics/Mechanical/Computer Engineering, Instrumentation;			
4.	Professional Subjects-Core (PC), relevant to the chosen specialization/branch; (May be split into Hard (no choice) and Soft (with choice), if required;)	30	40	50
5.	Professional Subjects – Electives (PE), relevant to the chosen specialization / branch;	10	15	20
6.	Open Subjects – Electives (OE), from other technical and / or emerging subject areas;	5	10	12
7.	Project Work, Seminar and/or Internship in Industry or elsewhere	10	15	20
8.	Mandatory Courses (MC);	Limited to less than 5% of the maximum permissible courses / credit load		8

The suggested Course Work (=176 Credits, at 22/Semester on an average with built-in flexibility of +/- 20% as indicated earlier) in previous table needs to be completed successfully by a student to qualify for the award of the UG E&T Degree from the concerned University/Institution. A widely accepted plan for sequencing the Course Work can be as in following table.

Typical Sequencing Plan for Courses at UG E&T Degree Programmes

Semesters	Subject Area Coverage
I – II	HS, BS and ES Courses common for all Branches; Mandatory Courses;
III-IV	HS, BS and ES Courses common for all Branches (to be continued); Also, Mandatory Courses (to be continued, if required); PC (Hard/Soft) Courses in two/three groups (like Electrical, Non-Electrical); area wise Orientation; Add-On Courses;
V-VII	PC (Hard/Soft), PE and OE Courses; Branch-wise Orientation; Add-On Courses; Seminar;
VIII	PE and OE Courses; Project work and Dissertation,



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	Internship, Seminar: Add-On Courses; Final wrap-up of Programme;
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The mandatory courses for all the programmes prescribed by AICTE are shown in the following table.

Mandatory Courses (MC)

S.No	Course No.	Course Title	Hrs/Wk L: T: P	Units	Preferred Semester
1.	MC 01	Technical English	3: 0: 0	3	I/II
2.	MC 02	Value Education, Human Rights and Legislative Procedures	3: 0: 0	3	I/II
3.	MC 03	Environmental Studies	3: 0: 0	3	III/IV
4.	MC 04	Energy Studies	3: 0: 0	3	III/IV
5.	MC 05	Technical Communication & Soft Skills	3: 0: 0	3	V/VI
6.	MC 06	Foreign Language	3: 0: 0	3	V/VI

NOTE: As and when AICTE brings in a new version of the “Model scheme of instructions and syllabus for UG engineering degree programmes”, the existing version will be superseded by the new one.

4.3 Semester Curriculum

The curriculum of each semester shall normally be a blend of theory courses not exceeding **7** and practical courses not exceeding **4**. The total number of courses per semester shall not exceed **10**.

4.4 Medium of Instruction

The medium of instruction for lectures, examinations and project work is English, except for language courses other than English.

5. Duration of the Programme

5.1 Each academic year will consist of **Two** semesters of **90** working days each

5.2 The normal and maximum permissible number of semesters for each programme is as given in **Table 2**.



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Table 2.

Category	Number of Semesters	
	Normal	Maximum Permissible
Regular	8	14
Lateral Entry	6	12

6. Class advisor and Ward Counselor (Mentor)

6.1 Class advisor

Head of the Department will allot one faculty member to be the class advisor for a particular batch of students throughout their period of study. The role of class advisors is as follows: i) To motivate and closely monitor the performance of the students. ii) To build a strong alumni base for the institution by maintaining a meaningful rapport with students and parents. iii) To maintain all important documents of the students for reference/inspection by all committees. iv) To work closely with the ward counselors on matters related to students attached to the ward counselors and update the green cards (overall data base) of the students of the class.

6.2 Ward Counselor (Mentor)

By guiding and counseling students, teachers can create a greater sense of belongingness amongst our student community. To help the students in planning their courses and for general guidance on the academic programme, the Head of the Department will allot a certain number of students to a teacher of the department who shall function as ward counselor throughout their period of study. The ward counselor will monitor the courses undertaken by the students, check attendance and progress of the students and counsel them periodically. The ward counselors should ensure that each student is made aware of the various options for growth, students are monitored and guided to become overall performers and students select and work for career choices of their interest. The ward counselors shall update and maintain the ward counselor record of each student attached to them. The ward counselors shall also help the class advisors to update the green card of students attached to them.

The ward counselor may also discuss with the class advisor and HoD and parents about the progress of the students.

7. Class Committee

7.1 Every class will have a class committee constituted by the HoD. The members of the class committee will be as follows:-

1. Chairperson (a teacher who is not normally teaching any course for the class)
2. All teachers handling courses for the class
3. Students (a minimum of 6 consisting of 3 boys and 3 girls on pro-rata basis)



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7.2 The functions of the class committee shall include the following.

7.2.1 Clarify the regulations of the programme and the details of rules therein.

7.2.2 Inform the student representatives, the academic schedule including the dates of assessments and the syllabus coverage for each assessment.

7.2.3 Inform the student representatives the details of Regulations regarding weightage used for each assessment. In the case of practical courses (laboratory/ drawing / project work / seminar etc.) the breakup of marks for each experiment / exercise / module of work, should be clearly discussed in the class committee meeting and informed to the students.

7.2.4 Analyze the performance of the students of the class after each test and initiate steps for improvement.

7.2.5 Identify slow learners, if any, and request the teachers concerned to provide additional help / guidance / coaching to such students.


7.2.6 Discuss and sort out problems experienced by students in the class room and in the laboratories.

7.3 The class committee shall be constituted within the first week of commencement of any semester.

7.4 The chairperson of the class committee may invite the class advisor / ward counselor and the Head of the Department to the meeting of the class committee.

7.5 The Principal may participate in any class committee meeting.

7.6 The chairperson is required to prepare the minutes of every meeting, submit the same through the Head of the Department to the Principal within two days of the meeting and arrange to circulate the same among the students and teachers concerned. Points requiring action by the management shall be brought to the notice of the management by the Principal.


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7.7 The class committee meetings are to be conducted as scheduled below.

Meeting 1	Within one week from the date of commencement of the semester
Meeting 2	One week before the 2 nd internal test
Meeting 3	One week before the 3 rd internal test

During the first meeting of the class committee, the students are to be informed about the nature and weightage of assessments as per the framework of the Regulations. During these meetings the student representatives shall meaningfully interact and express opinions and suggestions of the students of the class to improve the effectiveness of the teaching-learning process.


8. Course Committee for Common Courses

Each common theory course offered to more than one class / branch shall have a Course Committee comprising all the teachers teaching the common course with one of them nominated as Course Coordinator.

Sl.No	Nature of common course	Person responsible for forming course committee and nominating course coordinator
1.	For common course / course handled in a particular department	Respective HoD
2.	For common courses handled in more than one department	Controller of Examinations (CoE) to put up the course committee details to the Principal, get the same approved and intimate the concerned faculty

The course committee will ensure that a common question paper is prepared for the tests / exams and uniform evaluation is carried out. The Course committee will meet a minimum of 3 times in each semester.

The course committee should meet at-least 3 times in each semester The schedule for the course committee to meet is as follows.


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Meeting 1	Before one week of the start of the semester
Meeting 2	One week before internal test 2
Meeting 3	One week after 3 rd internal test

9. Requirements for Completion of a Semester

9.1 A student who has fulfilled the following conditions shall be deemed to have satisfied the requirements for completion of a semester.

9.1.1 Student should have earned a minimum of **80%** overall attendance in theory and laboratory courses. If a student fails to secure the minimum overall attendance of **80%**, he / she will not be permitted to appear for the current end semester examination and also to go to the subsequent semester. They are required to repeat the incomplete semester in the next academic year.

Note: All students are expected to attend all classes and secure 100% attendance. The above provision is made to allow for unavoidable reasons such as medical leave / participation in sports, NCC activities, co-curricular and extra-curricular activities.


Note: Faculty members have to mark attendance as '**present**' only for those students who are **physically present** in the class.

9.1.2 A maximum of **10%** concession in the overall attendance can be considered for students on medical reasons.

9.1.3 The need to award On Duty (OD) is eliminated as the student shall benefit from the 20% margin in attendance to take part in co-curricular and extra-curricular activities.

Apart from 20% margin in attendance, an additional 5% relaxation in attendance shall be provided after being recommended by a central committee constituting the Class Advisor, an ASP/AP from the Department and two Professors nominated by the Principal for the following categories.

i) NCC, NSS


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ii) Sports (in the beginning of the year the Physical Director should give the list of students who are in the institution team and who will represent the institution in sports events)

iii) Design competitions-state level and above

A student shall not benefit from the above privilege if the student has been recommended for disciplinary action due to inappropriate or disruptive behavior. Minimum 80% overall attendance will be the only attendance eligibility to appear for end semester exams for such students.

9.1.4 The days of suspension of a student on disciplinary grounds will be considered as days of absence for calculating the overall percentage of attendance.

10. Requirements for Appearing for End Semester Examination

10.1 A Student who has fulfilled the following requirements will be eligible to appear for End Semester Exam.

10.1.1 Attendance requirements as per Clause Nos.9

10.1.2 Registration for all eligible courses in the current semester and arrear examination (wherever applicable).

Note: Students who do not register as given in clause 10.1.2 will not be permitted to proceed to the subsequent semester.

10.2 Retests should be permitted only very rarely for genuine reasons with the approval of HoD and Principal. Such tests will be conducted before the last day of instruction of the concerned semester. Retest is not permitted for improvement.


10.3. There will be no minimum CAM requirement in a course from 2014 regulation onwards to register for the end semester examinations. CAM will be earned by a student as follows:

Theory Courses:

Internal marks will be awarded by conducting Three Internal Tests and assignments for all theory courses.

Practical Courses:

Internal marks will be awarded by:


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i) “Continuous assessment” of the performance of the student in each lab exercise/experiment.

ii) Conducting one model practical exam for every practical course.

Note: The students will be provided with a laboratory workbook and this will be the only document the student will maintain / get assessed periodically.

Retests:

A student who has not appeared for any one of the three internal tests (theory courses) shall be permitted to appear for a Retest (only one retest is permitted) only under the following two cases:

Case 1: Automatic exemption: Participation in NCC, NSS, Sports (in the beginning of the year the Physical Director should give the list of students who are in the institution team and who will represent the institution in sports events) or demise of immediate family members.

Case 2: Any other reasons: A committee constituting 1 professor, 1 ASP/AP and Class Advisor will scrutinize the case and submit their recommendations to the HoD, who in turn will forward the proposal to the Principal, get the approval and conduct retest. In case the retest is required by more than 10% of the students of a section, a review by a central committee and approval is required.

10.5 If a student is prevented to register in the end semester examinations for want of minimum overall attendance, the student is required to repeat the incomplete semester in the subsequent academic year.

10.5.1 If a student fails to clear a course in four attempts in a particular course through supplementary/end semester exams, the CAM of that course is nullified in the fifth attempt and the student will be allowed to appear for end semester examination and based on the student's performance in the end semester exam alone the result will be declared (that is, the student has to score a minimum of 50 out of 100 in the end semester exam for being declared to have passed in that course).

11. Provision for Withdrawal from Examination

A student may, for valid reasons (medically unfit / unexpected family situations), be granted permission to withdraw (after registering for the examinations) from appearing for any course or courses in the end semester examination. This facility can be availed only once during the entire duration of the degree programme. Withdrawal of application will be valid only if the student is, otherwise, eligible to write the examination and the application for withdrawal is made prior to the examination in the concerned course or courses. The application for withdrawal should be recommended by the Head of the Department and approved by the Principal. Withdrawal will not be considered as appearance for the purpose of classification of degree under **Clause 19**.

12. System of Evaluation

12.1 General Guidelines

The total marks for each course (Theory and Practical) will be 100, comprising two components as given below.

- a) Continuous Assessment Marks (CAM) – 50 Marks
- b) End Semester Exam (ESM) – 50 Marks

12.2 Marks distribution

12.2.1 Procedure for award of Continuous Assessment Marks (CAM) is as follows:

i. Theory courses

The distribution of marks for theory courses is given in **Tables 3 and 4**.

Table-3

Table C					
S. No.	Components for CAM	Syllabus Coverage for the test	Duration of the test in Hrs.	Marks (max.)	Question Paper Pattern (Three patterns have been listed. The selection of the pattern to be decided by the faculty handling the course)
01.	Internal Test - I	First 30 to 40 % of the syllabus	2	40 (equal weightage for all the three tests)	PATTERN – 1 Part A - 10x1 = 10 Marks Q.No.-1 to 10 Multiple choice questions (multiple choice, multiple selection, sequencing type, match the following, assertion – reason type) Part B - 05x2 = 10 Marks Q.No.-11 to 15 (Short Answer) Part C - 03x10 = 30 Marks Q.No.-16 - compulsory Q.No.-17, 18,19 (any two to be answered)
02.	Internal Test - II	Next 30 to 40 % of the syllabus	2		
03.	Internal Test - III	Last 30 to 40 % of the syllabus	2		



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04.	Retest (only one)	First 15 to 20 % and Last 15 to 20 % of the syllabus	2	Same weightage as one internal test	<p>Case studies, analytical questions, design or evaluation or analysis or application oriented questions to be given in part C</p> <p>Total = 50 Marks</p> <hr/> <p>PATTERN - 2 Multiple choice questions only 50x1 = 50 Marks Q.No.-1 to 50 (multiple choice, multiple selection, sequencing type, match the following, assertion – reason type)</p> <p>Total = 50 Marks</p> <hr/> <p>PATTERN – 3 Part A - 20x1 = 20 Marks Q.No.-1 to 20 Multiple choice questions (multiple choice, multiple selection, sequencing type, match the following, assertion – reason type) Part B - 2x15 = 30 Marks Q.No.-21- Compulsory Q.No.-22 and 23 (any one to be answered) Case studies, analytical questions, design or evaluation or analysis or application oriented questions to be given in part B</p> <p>Total = 50 Marks</p> <hr/> <p>Note: HOTS of Bloom's taxonomy to be followed where applicable in all the patterns</p>
05.	Assignment	-	-	10	<p>Process for awarding marks for assignments shall be based on any one of the following:</p> <ul style="list-style-type: none"> i) 2 Assignments ii) 1 Assignment + 1 presentation iii) 1 Assignment + 2 Written Objective test iv) 1 mini project
06.	Attendance (Refer clause-12.2.1(iv))	Attendance will not contribute to CAM of a course	--		
Total				50	

Pattern for end semester examination:

Table-4

S. No.	Exam	Syllabus Coverage for the exam	Duration of the exam in Hrs.	Marks (max.)	Question Paper Pattern
04.	End Semester Exam	Full Syllabus	3	50	<p>Part A - 10x1 = 10 Marks Q.No.-1 to 10 Multiple choice questions (multiple choice, multiple selection, sequencing type, match the following, assertion – reason type)</p> <p>Part B - 10x2 = 20 Marks Q.No.-11 to 20 Short Answer</p> <p>Part C - 05x14 = 70 Marks Q.No.-21 -compulsory Q.No.-22 to 26 (any four to be answered) Case studies, analytical questions, design or evaluation or analysis or application oriented questions to be given in part C</p> <p>Note: HOTS of Bloom's taxonomy to be followed where applicable Total = 100 Marks</p>
Total				50	

ii. Practical Courses

Every practical exercise / experiment in all practical courses will be evaluated based on the conduct of exercise / experiment and records maintained by the students. There will be one model practical examination.

The criteria for awarding marks for internal assessment is given in Table 5.

Table - 5

Items	Marks (Maximum)
Continuous assessment #	30
Model practical exams	20
Attendance { Refer-12.1(iv) }	-
Total	50

Continuous assessment norms (for each exercise/experiment):

Parameter	Range
1.Preparation	10 to 20%
2.Conduct of the exercise/experiment	20 to 30%
3.Observations made (data collection)	10 to 30%
4.Calculations, inferences, result	10 to 30%
5. Viva-voce	10 to 20%
Total	100

iii) (a) Project Work

The project will be carried out in two phases as follows: Phase-I in 7th semester and Phase-II in 8th semester. Separate project reports are to be submitted for phase-I and phase-II. Phase-I will purely be assessed internally.

The evaluation of the project work done by the student will be carried out by a committee constituted by the Principal on the recommendation of HoD. For each programme one such review committee will be constituted. There will be 3 assessments (each for 100 mark maximum) during the semester by the review committee. The student shall make a presentation on the progress made by him / her before the committee. There will be equal weightage for all the three assessments.

iii) (b) Technical Seminar & Mini Project:

These courses will be evaluated internally

iv) Attendance and assessment record


Every teacher is required to maintain an 'ATTENDANCE AND ASSESSMENT RECORD' for each course handled, which consists of students attendance in each lecture / practical / project work class, the test marks and the record of class work (topics covered). This should be submitted to the Head of the Department periodically (at least three times in a semester) for checking the syllabus coverage and the records of test marks and attendance. The HoD after due verification will sign the above record. At the end of the semester, the record should be submitted to the Principal for verification. After such verification, these records will be kept in safe custody by the respective HoD for five years.

Minimum overall attendance of 80% will be an eligibility criterion to take up end semester examinations and attendance will not contribute to CAM of a course.

12.2.2 End Semester Examination

(a) Theory Courses

The End Semester Examination for theory courses will be conducted with the


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pattern of Question Paper and duration as stated in Table 3(b) under clause 12.2. The evaluation will be for 100 **marks**. However, the question paper pattern for courses in engineering graphics and machine drawing will be designed differently to suit the specific need of the courses.

(b) Practical Courses

End semester examination for practical courses will be conducted jointly by one internal examiner and one external examiner appointed by the Controller of Examinations with the approval of the Principal.

The evaluation will be for **100** marks and the weightage for End Semester Practical Course will be **50**.

(C) Question Paper setting (ESM)

50% of theory courses in a semester will be randomly selected for setting question papers by External Examiners with sound knowledge in Revised Bloom's Taxonomy by the Controller of Examination. Head of the Department will give internal list of panel of examiners to set question papers in the remaining 50% of the theory courses.

(D) Evaluation of Answer Book

50% of theory courses in a semester will be randomly selected by the Controller of Examination for evaluation by External Examiners. Head of the Department will nominate senior faculty to evaluate the answer books in the remaining 50% of the theory courses.

12.3 Malpractice

If a student indulges in malpractice in any internal test / end semester examination, he / she shall be liable for punitive action as prescribed by the University.

12.4 Supplementary Examination

The arrear course (practical / theory) examinations of ODD semesters will be conducted soon after the publication of ODD semester regular exam (Nov / Dec) results. Similarly the arrear course examinations of EVEN semesters will be conducted soon after the publication of EVEN semester

regular exam (April / May) results. Failed candidates in regular examinations **should compulsorily register** for all the practical / theory courses in the supplementary examinations.

The institution will conduct only the exams for the odd semester courses (one regular exam + one supplementary exam for arrears of the odd semesters) during November / December and will conduct only the exams for the even semester courses (one regular exam + one supplementary exam for arrears of the even semesters) during April / May of an academic year.

Students who have completed the eighth semester will be eligible for attending the **special supplementary exam** for all semester arrear papers (from 1st to 8th semesters) in the even semester examination session soon after their eighth semester regular examination results. Students who have **more than six arrears are not eligible** to appear for the special supplementary exam.

Controller of Examination (CoE) will publish a schedule of supplementary examinations after the last date of registering for the examinations. The pattern of evaluation will be the same as that of end semester examinations.

The revaluation of answer script will not be applicable for supplementary exam. However challenge of evaluation of answer script is allowed. The Arrear examination will be termed as supplementary examinations and such appearance in supplementary exam will be treated as another attempt and will be reflected in the grade sheet

Note: Refer clause 14 for procedure for re-totaling / revaluation / challenge of evaluation


- 12.5** A student who has appeared and passed any course is not permitted to re-enroll / reappear in the course / exam for the purpose of improvement of the grades.

13. Pass Minimum

13.1 Pass minimum for each theory, practical courses and project work is

- **50%** in the end semester examinations
- **minimum 50%** of the grand total of continuous assessment marks and end semester examinations marks put together

13.2 For students scoring less than the passing minimum marks in the end semester examinations, the term “**RA**” against the concerned course will


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be indicated in the grade sheet. The student has to reappear in the subsequent examinations for the concerned course as arrears.

For a student who is absent for theory / practical / project viva- voce, the term “**AB**” will be indicated against the corresponding course. The student should reappear for the end semester examination of that course as arrear in the subsequent semester.

The letter grade “**W**” will be indicated for the courses for which the student has been granted authorized withdrawal (**refer clause 11**).

14. Methods for Redressal of Grievances in Evaluation

Students who are not satisfied with the grades awarded can seek redressal by the methods given in Table 6.



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Table 6


Note: All applications to be made to CoE along with the payment of the prescribed fee.

Sl.No.	Redressal Sought	Methodology	
		Regular exam	Arrear exam
1.	Re totaling	Apply for photo copy of answer book / Then apply for re totaling	Apply for photo copy of answer book / Then apply for re totaling
		(within 5 days of declaration of result)	
2.	Revaluation	Apply for photo copy of answer book / Then apply for revaluation after course expert recommendation	Not permitted
		(within 5 days of declaration of result)	
3.	Challenge of evaluation	Apply for photo copy of answer book / Then apply for revaluation after course expert recommendation / Next apply for challenge of evaluation	Apply for photo copy of answer book / Then apply for challenge of evaluation after course expert recommendation
		(within 3 days of publication of revaluation results)	

These are applicable only for theory courses in regular and arrear end semester examinations.

14.1 Challenge of Evaluation

- a) A student can make an appeal to the CoE for the review of answer scripts after paying the prescribed fee.
- b) CoE will issue the photo copy of answer script to the student.
- c) The faculty who had handled the subject will evaluate the script and HoD will recommend.
- d) A Committee consisting of 2 experts appointed by CoE will review and declare the result.
- f) If the result is in favour of the student, the fee collected will be refunded to the student.
- h) The final mark will be announced by CoE.


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15. Classification of Performance

Classification of performance of students in the examinations pertaining to the courses in a programme is done on the basis of numerical value of Cumulative Grade Point Average (**CGPA**). The concept of **CGPA** is based on Marks, Credits, Grade and Grade points assigned for different mark ranges. **Table 7** shows the relation between the range of marks, Grades and Grade points assigned against each course.

Table 7

Range of Marks	Grade	Grade Points (GP)
100 - 90	S – Outstanding	10
89 - 80	A – Excellent	9
79 - 70	B - Very Good	8
69 - 60	C - Good	7
59 - 55	D – Fair	6
54 – 50	E – Average	5
< 50	RA	0
Withdrawal from examination	W	-
Absent	AB	-

15.1 Semester Grade Point Average (SGPA)

On completion of a semester, each student is assigned a Semester Grade Point Average which is computed as below for all courses registered by the student during that semester.

$$\text{Semester Grade Point Average} = \sum (C_i \times GP_i) / \sum C_i$$

Where **C_i** is the credit for a course in that semester and **GP_i** is the Grade Point earned by the student for that course.

The **SGPA** is rounded off to two decimals.

15.2 Cumulative Grade Point Average (CGPA)

The overall performance of a student at any stage of the Degree programme is evaluated by the Cumulative Grade Point Average (**CGPA**) up to that point of time.



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$$\text{Cumulative Grade Point Average} = \sum (\mathbf{C_i} \times \mathbf{GP_i}) / \sum \mathbf{C_i}$$

Where **C_i** is the credit for each course in each of the completed semesters at that stage and **GP_i** is the grade point earned by the student for that course.

The **CGPA** is rounded off to two decimals.

16. Issue of Grade Sheets

16.1 Separate grade sheet for each semester will be given to the students by the CoE after the publication of the results.

16.2 After the completion of the programme, a consolidated grade sheet will be issued to the student.

16.3 No separate grade sheet for supplementary examination/special supplementary examination will be issued to the students by the CoE after the publication of supplementary examination/special supplementary examination result.

The result of the supplementary examination will get reflected in the subsequent semester grade sheet. The result of the special supplementary examination will get reflected only in the consolidated statement of grade (that is, consolidated grade sheet).


17. Temporary Break of Study from a Programme

17.1 Break of study is not normally permitted. However, if a student intends to temporarily discontinue the programme in the middle of a semester / year for valid reasons (such as accident or hospitalization due to prolonged ill health) and wish to rejoin the programme in the next year, he / she shall apply in advance to the Principal through the Head of the Department stating the reasons. The application shall be submitted not later than the last date for registering for the semester examinations in that concerned semester. Break of study is permitted only once during the entire period of the degree programme.

17.2 The student permitted to rejoin the programme after the break shall be governed by the rules and regulations in force at the time of rejoining.

17.3 The duration specified for passing all the courses for the purpose of classification of degree (vide Clause 19) shall be increased by the period of such break of study permitted.

17.4 If a student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted Break of Study and Clause 17.3 is not applicable for this case.


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18. Eligibility for the Award of Degree

A student shall be declared to be eligible for the award of the B.E. / B. Tech. Degree provided the student has successfully completed the course requirements and has passed all the prescribed examinations in all the Eight semesters (**Six** semester for lateral entry) within a maximum period of **7** years (**6** years for lateral entry) reckoned from the commencement of the first semester to which the candidate was admitted.

19. Classification of Degree

The degree awarded to eligible students will be classified as given in **Table 8**.

Table 8

S.No.	Class Awarded	Criteria
01.	First class with distinction	a) Passing of the examinations of all the courses in all Eight semesters (for regular) and all Six semesters (for lateral entry) in the first appearance. b) CGPA > 8.5 c) One year authorized break of study (Clause 17) and one authorized withdrawal (Clause 11) is permissible.
02.	First class	a) Passing of the examinations of all the courses in all Eight semesters (for regular) and all Six semesters (for lateral entry student) within a maximum of Ten semesters for regular and a maximum of Eight semesters for lateral entry students. b) CGPA > 6.5 c) One year authorized break of study (Clause 17) and one authorized withdrawal (Clause 11) is permissible.
03.	Second class	a) All other students (not covered in clauses at S.No.1& 2 under Clause 19) who qualify for the award of the degree (vide clause 18) shall be declared to have passed the examination in Second Class.

Note: A student who is absent for the end semester examination in a course / project work Viva Voce after having registered for the same will be considered to have appeared for that examination for the purpose of classification.



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20. Award of Degree

The award of Degree to all eligible students will be approved by the Academic Council of the institution. The degree will be issued by Anna University Chennai. The consolidated Grade Sheet will be issued by institution.

21. Industrial Visit


Every student is expected to undertake one local Industrial visit during the 2nd, 3rd and 4th year of the programme. The Faculty Advisor in consultation with the Head of the Department will organize the visit. Faculty should accompany the students during Industrial visits.

22. Personality and Character Development

All students shall enroll, on admission, in any one of the personality and character development programmes (NCC / NSS / NSO / YRC) and undergo training for about 80 hours and attend a camp of about ten days. The training shall include classes on hygiene and health awareness and also training in first-aid.

- National Cadet Corps (NCC) will have about 20 parades.
- National Service Scheme (NSS) will have social service activities in and around the institution.
- National Sports Organization (NSO) will have Sports, Games, Drills and Physical exercises.
- Youth Red Cross (YRC) will have activities related to social services in and around institution. However, YRC will not have special camps of 10 days. While the training activities will normally be during weekends, the camps will normally be during vacation period.

Every student shall put in a minimum of **75%** attendance in the training and attend the camp (except YRC) compulsorily. The training and camp (except YRC) shall be completed during the first year of the programme. However, for valid reasons, the Principal may permit a student to complete this requirement in the second year.


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23. Discipline

Every student is required to be disciplined and maintain decorum both inside and outside the institution campus. They should not indulge in any activity which can bring down the reputation of the University or institution. The Principal shall refer any act of indiscipline by students to the discipline and welfare committee.

24. Special Provisions

24.1 Option for Elective Courses

A student can have the option of taking 2 elective courses from other departments (maximum of one per semester)

24.2 Fast Track Programme

Students who maintain a CGPA of greater than or equal to 8.5 at the end of fourth semester and have passed all courses in first appearance (from semester 1 to semester 4 for regular category / semester 3 to semester 4 for Lateral Entry) are eligible for a fast track programme. Students can opt for the fast track programme from the Fifth Semester. The three elective courses of the eighth semester can be taken in the earlier semesters (maximum one per semester) by the students. This will enable the students to be completely free from theory courses in the Eighth Semester. Students can pursue internship / industrial projects on a full time basis.

24.3 One credit courses

One Credit Courses: Students can also opt for one credit industry oriented courses for a minimum of 15 hours duration, which will be offered by experts from industry on specialized topics apart from the prescribed courses of study of the programme. Students can complete such one credit courses during the semesters 5 to 7 as and when these courses are offered by any of the departments. There is no limit on the number of one credit courses a student can register and successfully complete during the above period.

Steps involved in designing and assessment of one credit courses:

Step1: The HOD and industry expert shall decide name and syllabi of the one credit course.

Step2: The concerned HOD collects the name list of the students those are interested in attending the above course. Each batch consists of 10 to 30 students.

Step3: The course shall be taught by industry experts as a course teacher.

Step4: The course teacher shall give assignments and conduct internal test 1&2 and viva voce.

Step5: The Course end examination shall be conducted and the evaluation will be done by the same industry expert.

EVALUATION PROCEDURE FOR ONE CREDIT COURSES


Total 50 Marks

Only one course end examination (for one and a half hours)	50 Marks
Proposed frame work for question paper and marks distribution	
Objective type questions (20 x 1 mark)	20 Marks
Application oriented questions (3 x 10 marks)	30 marks
Total	50 marks

The exam is to be conducted at the end of the course. Passing criteria is 50% (that is, 25 marks out of 50 marks). If the student passes the course, it will be indicated in the grade sheet. If the student fails to pass the course, the one credit course will not get reflected in the grade sheet. There is no arrear exam for one credit courses. The one credit courses will not be considered for computing CGPA.

25. Human excellence courses

Four human excellence courses (with one credit for each of the courses – minimum 15 hours duration) will be offered from the first to forth semesters (one course per semester). Credits will be indicated for these courses in the grade sheet and will be considered for computing CGPA.


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EVALUATION PROCEDURE FOR HUMAN EXCELLENCE COURSES

Total 50 Marks

Only one course end examination (for one and a half hours)	50 Marks
Proposed frame work for question paper and marks distribution	
Objective type questions (20 x 1 mark)	20 Marks
Application oriented questions (3 x 10 marks)	30 marks
Total	50 marks

The exam is to be conducted at the end of the course. Passing criteria is 50% (that is, 25 marks out of 50 marks). If the student passes the course, it will be indicated in the grade sheet. There will be arrear exam for human excellence courses.


26. Revision of Regulation and Curriculum

The institution may from time to time revise, amend or change the Regulations, scheme of examinations and syllabi, if found necessary. Academic Council assisted by Board of Studies and Standing Committee will make such revisions / changes.

Note: Any ambiguity in interpretation of this regulation is to be put up to the Standing Committee, whose decision will be final.

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Note: - Printed during the year July – 2014.


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Department of Fashion Technology

Vision

Achieve excellence in academics and research by bestowing technological prowess and managerial acumen to our students to face the global challenges of the clothing industry within the context of professional and social responsibility.

Mission

- Disseminate core competencies with a comprehensive curriculum encompassing apparel design, manufacture and management.
- Stimulate analytical and creative thinking to transform the students as competent professionals and researchers.
- Promote collaborations with industry to comprehend global practices leading to excellence.
- Mould the students as socially responsible technocrats and entrepreneurs to develop products and offer services useful for society.

Programme Educational Objectives

1. To provide strong foundation to graduates to pursue a successful profession or higher studies
2. To enrich competence of graduates to identify problems in the apparel domain and to provide techno-economic solutions focusing on the need of the industry and society.
3. To imbibe awareness among graduates on the significance of professional and social ethics in their professional career.

Program Outcomes

1. Acquire knowledge on the principles of mathematics, science and basic engineering, and apply the same in apparel engineering processes.
2. Analyze and identify required parameters vital to design and manufacture apparel products suiting the needs of the market
3. Acquire creative and innovative skills to design apparels and contribute to the design of systems, components of processes with due considerations given to public health, safety, cultural, societal and environmental factors.
4. Acquire skills to conduct experiments/investigations and interpret data with reference to systems and standards to provide valid inference in apparel engineering.
5. Gain skill to use modern design and engineering tools towards optimum utilization of resources in apparel product and process development.
6. Obtain knowledge of societal, health, safety, legal and cultural issues related to fashion and textile technology and understand the accountability and responsibility while undertaking engineering technology practice in the current situations
7. Understand the impact of sustainable development in apparel manufacturing processes.
8. Understand the commitment towards professional ethics and responsibilities in the entire apparel business processes
9. Acquire capability to contribute significantly as an individual and as a team player all through the Apparel supply chain.



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10. Acquire skill to effectively communicate in written, oral and illustrative formats to put forth solutions, reports and effectively present them in precise and clear manner in the apparel supply chain from concept to consumer.
11. Apply the knowledge, skill and attitude as a team player in initiating, executing and managing projects in the areas of design, manufacture, marketing and entrepreneurship in multi-disciplinary environments.
12. Recognize the need for, and to have the ability to engage in life-long learning in the context of technological change in the apparel field.



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KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE – 641 049
REGULATION 2014
B. TECH. FASHION TECHNOLOGY
CURRICULUM

SEMESTER III

Code No.	Course Title	L	T	P	C
Theory					
U14MA7305	Probability and Applied Statistics	3	1	0	4
U14FT7301	Concepts of Fashion and Design	3	0	0	3
U14FTT302	Knitting Technology	3	0	0	3
U14FTT303	Basic Pattern Making and Adaptation	3	0	0	3
U14FTT304	Garment components fabrication	3	0	0	3
U14EET311	Basics of Electrical and Electronics Engineering	3	0	0	3
Practical					
U14FTP301	Fashion Design Laboratory - I	0	0	3	1
U14FTP302	Garment Components Fabrication Laboratory	0	0	3	1
U14EEP311	Basics of Electrical & Electronics Engineering Laboratory	0	0	3	1
U14GHP301	Social values	1	0	1	1

TOTAL CREDITS: 23


SEMESTER IV

Code No.	Course Title	L	T	P	C
Theory					
U14MA7401	Numerical Methods	3	1	0	4
U14GST001	Environmental Science and Engineering	3	0	0	3
U14FTT401	Apparel Production Technology	3	0	0	3
U14FTT402	Apparel Machinery and Equipment	3	0	0	3
U14FTT403	Fabric Structure and Design	3	1	0	4
U14MET407	Basics of Mechanical Engineering	3	0	0	3
Practical					
U14FTP401	Fashion Design Laboratory - II	0	0	4	2
U14FTP402	Apparel Machinery Laboratory	0	0	4	2
U14FTP403	Fabric Structure and Design Analysis Laboratory	0	0	4	2
U14GHP401	National and Global Values	1	0	1	1

TOTAL CREDITS: 27

SEMESTER V

Code No.	Course Title	L	T	P	C
Theory					
U14FTT501	Fashion Apparel Design and Development	3	0	0	3


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U14FTT502	Surface Ornamentation and Accessories	3	1	0	4
U14FTT503	Clothing Science and Fit	3	0	0	3
U14FTT504	Textile Chemical Processing	3	0	0	3
U14FTT505	Textile and Apparel Quality Evaluation	3	0	0	3
E1	Elective I	3	0	0	3
Practical					
U14FTP501	Apparel Production Laboratory - I	0	0	4	2
U14FTP502	Textile Chemical Processing Laboratory	0	0	4	2
U14FTP503	Textile Quality Evaluation Laboratory	0	0	4	2
U14FTP504	Industrial Training*	0	0	-	1

* - Industrial Training to be undertaken during the 4th semester summer vacation - Internal evaluation only

TOTAL CREDITS: 26

SEMESTER VI

Code No.	Course Title	L	T	P	C
Theory					
U14GST007	Profession Ethics	3	0	0	3
U14FTT601	Apparel Product Development	3	0	0	3
U14FTT602	Apparel Merchandising	3	0	0	3
U14FTT603	Apparel Production Planning and Control	3	1	0	4
U14FTT604	Apparel Finishing and Care	3	0	0	3
E2	Elective II	3	0	0	3
Practical					
U14FTP601	Apparel Production Laboratory - II	0	0	4	2
U14FTP602	Apparel CAD Laboratory	0	0	4	2
U14ENP601	Communication Skill Laboratory	0	0	3	1
U14FTP603	Mini Project*	0	0	-	1

* - Mini Project to be undertaken during the 5th semester vacation - Internal evaluation only

TOTAL CREDITS: 25

SEMESTER VII

Code No.	Course Title	L	T	P	C
Theory					
U14FTT701	Industrial Engineering in Apparel Manufacturing	3	0	0	3
U14FTT702	Social Compliance for Apparel Industry	3	0	0	3
U14FTT703	Quality Assurance in Apparel Production	3	0	0	3
U14FTT704	Costing in Apparel Industry	3	1	0	4
U14FTT705	Apparel Export Management	3	0	0	3
E3	Elective III	3	0	0	3
Practical					
U14FTP701	Apparel Quality Evaluation Laboratory	0	0	4	2
U14FTP702	Portfolio Presentation	0	0	4	2
U14FTP703	Project Work - Phase I	0	0	4	2

TOTAL CREDITS: 24



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SEMESTER VIII

Code No.	Course Title	L	T	P	C
Theory					
E4	Elective IV	3	0	0	3
E5	Elective V	3	0	0	3
E6	Elective VI	3	0	0	3
Practical					
U14FTP801	Project Work – Phase II	0	0	18	6

TOTAL CREDITS: 15**ELECTIVES FOR FIFTH SEMESTER**

Code No.	Course Title	L	T	P	C
Elective I					
U14FTE101	Fashion Photography	3	0	0	3
U14FTE102	Visual Merchandising	3	0	0	3
U14FTE103	Garment Trims and Accessories	3	0	0	3
U14CSE141	Object Oriented Programming with C++	2	0	2	3

ELECTIVES FOR SIXTH SEMESTER

Code No.	Course Title	L	T	P	C
Elective II					
U14FTE201	Intimate Apparels	3	0	0	3
U14FTE202	Home Furnishings	3	0	0	3
U14GST003	Principles of Management	3	0	0	3
U14GST004	Operations Research	3	0	0	3

ELECTIVES FOR SEVENTH SEMESTER

Code No.	Course Title	L	T	P	C
Elective III					
U14FTE301	Fashion Communication and Marketing	3	0	0	3
U14FTE302	Logistics and Supply Chain Management	3	0	0	3
U14FTE303	Functional Clothing	3	0	0	3
U14FTE304	Fashion Retail Management	3	0	0	3
U14GST002	Total Quality Management	3	0	0	3

ELECTIVES FOR EIGHTH SEMESTER

Code No.	Course Title	L	T	P	C
Elective IV					
U14FTE401	Application of Computers in Apparel Industry	3	0	0	3
U14FTE402	Leather Apparel Technology	3	0	0	3
U14FTE403	Global Marketing and Sourcing Strategies	3	0	0	3
U14FTE404	Technical Textiles	3	0	0	3
Elective V					
U14FTE501	Nonwovens	3	0	0	3
U14FTE502	Theory of Textile Structures	3	0	0	3
U14FTE503	Application of ERP and MIS in Apparel Industry	3	0	0	3



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U14FTE504	Apparel Brand Management	3	0	0	3
Elective VI					
U14FTE601	Entrepreneurship Development	3	0	0	3
U14FTE602	Energy Management in Apparel Industry	3	0	0	3
U14GST005	Engineering Economics and Financial Management	3	0	0	3
U14GST006	Product Design and Development	3	0	0	3


ONE CREDIT COURSES

Sl. No.	Course Title	Industry that will offer the course
U14FTIN01	Design of experiments	Research Institute/consultants
U14FTIN02	New trends in printing	Apparel Industry
U14FTIN03	Waste elimination and value stream mapping in apparel industry	Apparel Industry
U14FTIN04	Application of six sigma in apparel manufacture	Apparel Industry
U14FTIN05	Certification procedures for product and process in apparel industry	Apparel Industry/Certification Agencies
U14FTIN06	Sewing machinery dynamics	Apparel Machinery Manufacturers/Suppliers
U14FTIN07	Draping Techniques	Designers
U14FTIN08	Recent Industrial Engineering Practices in Apparel Industry	Apparel Industry/Consultants



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SEMESTER III


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L	T	P	C
3	1	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Compute measures of central tendencies, dispersions and correlate the variables.

CO2: Analyze random or unpredictable experiments and investigate important features of random experiments.

CO3: Construct probabilistic models for observed phenomena through distributions which play an important role in many engineering applications.

CO4: Analyze sample data and interpret the same for population.

CO5: Sketch the control charts and outline the process capability.

Pre Requisite: NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S				W							
CO2	S	M										
CO3	M											
CO4		M		M								
CO5	M				W							

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, Tutorial End Semester Exam	Course –End Survey

STATISTICAL MEASURES**5 Hours**

Measures of central tendency: Mean, Median and Mode – Measures of variation: Range, Mean deviation, standard deviation and coefficient of variation.

CORRELATION AND REGRESSION**4 Hours**

Karl Pearson's coefficient of correlation – Spearman's Rank Correlation – Regression lines.

PROBABILITY AND RANDOM VARIABLE**9 Hours**

Axioms of probability - Conditional probability – Total probability – Baye's theorem - Random variable – Distribution function – properties – Probability mass function – Probability density function – moments and moment generating function – properties.

STANDARD DISTRIBUTIONS**9 Hours**

Binomial, Poisson and Normal distributions – Moments, Moment Generating functions and properties for the above distributions - Fitting of Binomial, Poisson and Normal distributions.

TESTING OF HY1POTHESIS**9 Hours**

Testing of hypothesis for large samples (single mean, difference of means, single proportion, difference of proportions) – Small samples tests based on t and F distributions (single mean, difference of means, paired t- test and variance ratio test) – Chi-square test for independence of attributes and goodness of fit.



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DESIGN OF EXPERIMENTS**4 Hours**

Analysis of Variance (ANOVA) – Completely Randomized Design (CRD) – Randomized Block Design (RBD) – Latin Square Design (LSD).

STATISTICAL QUALITY CONTROL**5 Hours**

Concept of process control - Control charts for variables – \bar{X} , R – charts – Control charts for attributes – p, np, c – charts – Tolerance limits.

Theory: 45 Hours**Tutorial: 15 Hours****Total: 60 Hours****REFERENCES**

1. Veerarajan T., “Probability and Statistics”, Tata McGraw-Hill, New Delhi, 2007 & 2nd Reprint 2004.
2. Gupta S. P, “Statistical Methods”, Sultan Chand & Sons Publishers, 2004.
3. Johnson R. A., “Miller & Freund’s Probability and Statistics for Engineers”, Sixth Edition, Pearson Education, Delhi, 2000.
4. Gupta S.C, and Kapur, J.N., “Fundamentals of Mathematical Statistics”, Sultan Chand, Ninth Edition, New Delhi, 1996.
5. Walpole R. E., Myers S.L. & Keying Ye, “Probability and Statistics for Engineers and Scientists”, Pearson Education Inc, 2002.



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U14FTT301 CONCEPTS OF FASHION AND DESIGN

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on elements & principles of design in context to apparels

CO2: Acquire knowledge on color basics, dimensions, categories and their characteristics

CO3: Ability to understand the dynamics of fashion and the role of fashion designers

CO4: Acquire knowledge on the fashion forecasting process

CO5: Appreciate the significance of a fashion portfolio & traditional world costumes and Traditional textiles of India

Pre Requisite: NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M									
CO2	S	S	M									
CO3	S	S	S									
CO4	S	S	M									
CO5	S	M	S									

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	Course –End Survey

DESIGN CONCEPTS:**7 Hours**

Design – definition, Design types- natural, stylized, geometric, historic and abstract, garment design- structural, decorative and functional. Elements of Design –line, shape, form, size, colour, texture and pattern. Principles of Design – Harmony, Balance, Rhythm, Emphasis and Proportion. Introducing elements and principles of design in apparels.

COLOUR CONCEPTS:**7 Hours**

Color – Definition, Dimensions of colour-Hue, Value and Intensity, Colour categories and psychology - Warm and Cool Colours, Advancing and Receding colours, Colour theories – Prang colour system and Munsell colour system - colour harmonies.

FASHION FUNDAMENTALS:**11 Hours**

Fashion -Definition, Classification of fashion, tangibles and intangibles of fashion, Principles of fashion, Fashion life cycle, Fashion adoption theories. Fashion terminology -Street fashion, Recurring fashion, Mass fashion, Fashion trend, Fashion shows, Style, Chic, Boutique, Haute Couture, Fashion designers – definition, role and study of leading fashion designers - French, Italian, American, Indian and British.

FASHION DESIGNING PROCESS:**9 Hours**

Fashion Forecasting – role of forecasting agencies, techniques and presentation of forecast. Design process – Innovation of practice, analyzing the brief, Research inspiration – Research direction,



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prototyping, planning a collection, designer boards and portfolio presentation

HISTORIC COSTUMES AND TEXTILES:

11 Hours

Origin and importance of clothing, Factors influencing costume changes. Costumes of ancient civilization – Egypt, Greece, Rome, British Medieval period and French empires during Renaissance period 1500 - 1600 AD, Traditional costumes of India, China and Japan. Traditional Textiles of India – Dacca Muslin, Jamdhani, Himrus and Amrus, Kashmir shawls, Kancheepuram and Baluchari saris, Paithani saris, Chanderi saris, Benaras Brocades, Bandhani, Patola, Ikkat, Block printed and Kalamkari.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Kathryn McKelvey and Janine Munslow, "Fashion Design: Process, Innovation and Practice", Blackwell Publishing, USA, 2005.
2. Diane.T and Cassidy. T, "Colour forecasting" Blackwell Publishing, 2005
3. Dar, S.N., "Costumes of India and Pakistan", D.B Tataporevala Sons and Co. Ltd., 1982.
4. Churye G.S, "Indian Costume", Popular Prakashan Pvt. Ltd., Bombay, 1995.
5. Hatanaka Kokyo Collection –"Textile arts of India", Chronide Books, 1996
6. Elaine Stone, Jean A. Samples, " Fashion Merchandising" McGraw-Hill Book Company 1985.
7. Russel Gillow and Nicholas Barnard, "Traditional Indian Textiles", Thames and Hudson Ltd., London, 1991.
8. Douglas.A. Russel, "Costume History and Style", Prentice Hall Inc., 1983
9. Elizabeth Rouse, "Understanding Fashion", Blackwell Scientific Publication, Oxford, 1989.
10. Katherine Morris Lustre, "Historic Costume", Chas A. Bennett Co., Publishers, Peoria, Illinois, 1956.



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Recognize the weft knitted fabric production processes

CO2: Outline the structure and properties of various weft knitted fabrics

CO3: Acquire know ledge on the structure and properties of various advanced weft knitted fabrics

CO4: Recognize the structure, properties ,applications and Latest developments in warp knitting

CO5: Acquire knowledge on the application of knitted structures for Technical Textiles

Pre Requisite :

U14FTT101 Fibre Science and Yarn Technology

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										
CO2	S	M										
CO3	S	M	W									
CO4	S	M	W									
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Surveys

PRINCIPLE OF WEFT KNITTING:**9 Hours**

Comparison of Weaving and Knitting-Terms and definitions in weft knitting. - Knitting elements-Needles and its types, sinker, cam. Knitting action of latch, bearded and compound needles. - Classifications of weft knitting machines. Parts and functions of Plain, circular rib, and interlock machine. - Yarn quality for knitting.-selection of weft knitted fabrics

WEFT KNIT STRUCTURES:**9 Hours**

Classification of weft knit structures,-Symbolic and diagrammatic representation of weft knit structures.- Comparison of single jersey, rib and interlock and purl structures-comparison knit, tuck, float Stitches-unconventional stitches - Single jersey derivatives, accordion, check and stripe effect.- Rib derivatives derby rib and Swiss rib, royal rib, polka rib- Rib gated structures Milano Rib, Double pique and Pique poplin.- Knitted fabric Geometry Kc, Kw, Ks, R-knitted fabric defects-quality control

ADVANCED WEFT KNIT STRUCTURES:**9 Hours**

Eight lock structure, Interlock gated structures Single pique, Ponte-di-Roma and Ottoman rib. - Derivatives of purl structure cross purl and basket purl - Blister fabrics – Introduction to Jacquard structures- socks knitting- flat bed knitting- weft knitting calculations for GSM and production- Latest developments in Weft knitting machines and fabrics, -Principles of seamless



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garment manufacture in circular and flat knitting

WARP KNITTING:

9 Hours

Comparison of warp and weft knitting-basic warp knitting elements, knitting cycle- tricot, Rachel machines. Comparison of tricot and Rachel Warp knitting –Basic stitches- pillar, blind lap, tricot, inlay, satin and atlas stitches. – Basic Tricot Warp Knit Structures full tricot, lock knit and loop raised fabrics. Basic Raschel Warp Knit structures- power nets, curtains and laces. – Latest developments in warp knitting machines. - warp knitting calculations for GSM, production

KNITTED STRUCTURES FOR TECHNICAL TEXTILES:

9 Hours

Different Application segments in Technical textiles-Weft knitted structures for technical textiles -application of Weft knitted structures for different end uses in technical textiles -Warp knitted structures for technical textiles -application of Warp knitted structures for different end uses in, Geo Textiles, Medical textiles, Automotive, Sports and, Industrial textiles

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Ajgaonkar D B, “Principles of Knitting”, Universal Publishing Corporation, 1998.
2. Anbumani N, “Knitting – Fundamentals, Machines, Structures and Developments”, New Age International Publishers, 2007.
3. David Spencer., “Knitting Technology”, Pergamon Press, Oxford 2005.
4. Pradip V Mehta, “Introduction to Quality Control for the Apparel Industry”, ASQC Quality Press, 1992.



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U14FTT303 BASIC PATTERN MAKING AND ADAPTATION

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Define and classify the patterns and memorize the steps involved in taking body measurement

CO2: Prepare the basic block patterns for men, women and kids wear based on the principles and methodologies of drafting

CO3: Prepare patterns for basic blocks and garment components using draping techniques

CO4: Apply dart manipulation techniques to design, variation in garment components.

CO5: Acquire knowledge on the techniques involved in pattern alteration and grading for various body measurements

Pre Requisite : NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S										
CO2	S	S										
CO3		M	S									
CO4		S	S									
CO5	S	S	M									

Course Assessment methods:

Direct	Indirect
1. Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Surveys

BASIC PATTERN MAKING:**9 Hours**

Patterns – definition and types- individual and commercial patterns. Pattern making – definition and types of pattern making- drafting, draping, flat pattern techniques, their advantages and disadvantages. Tools for pattern making. Body measurements – importance, principles, precautions. Definition and standardization of size chart (ASTM Standards)

DRAFTING:**9 Hours**

Basic principles and methodologies used to draft standard basic block patterns for men, women and kids wear- top, skirt and bifurcated garment (pyjama) . Importance of pattern details – pattern name, cut number, on fold details, drill hole marks, darts, Seam allowances, notches, Balances marks and grain lines.

DRAPING:**9 Hours**

Draping - Tools for Draping. Draping skills – preparation of basic blocks- bodice, skirt, sleeve and trouser.

FLAT PATTERN TECHNIQUES:**9 Hours**

Dart Manipulation – basic techniques – pivot method, slash and spread, measurement method. Applications of dart manipulation on bodice with darts on shoulder, armhole, side seam and



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waistline – transferring darts, combining, dividing, converting into seams and fullness – drafting princess line cut.

PATTERN ALTERATION:

7 Hours

Pattern alteration - definition, principles, techniques – Lengthening, shortening, widening, narrowing patterns according to required body measurements by slash and spread or slash and overlap methods.

GRADING:

5 Hours

Grading – Definition, Principles and types –manual grading and computerized grading for bodice block, sleeve and skirt.

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. Helen Joseph Armstrong, “Pattern Making for Fashion Design” Pearson Education (Singapore) Pvt. Ltd., 2005
2. Winifred Aldrich, “Metric Pattern Cutting” Blackwell Science Ltd., 1994
3. Amaden-Crawford Connie, “The Art of Fashion Draping (3rd edition)” Om Books International Publications, 2005
4. Hollen Norma R; Kundel Carlyn, “Pattern making by the flat pattern method”, 1998
5. Gillian Holman, “Pattern Cutting Made Easy”, Blackwell Scientific Publications, 1997.
6. Natalie Bray “More Dress Pattern Designing” Blackwell Scientific Publications, 1986.
7. Gerry Cooklin, “Master Patterns and Grading for Women’s Outsizes”, Blackwell Scientific Publications, 1995.
8. Gerry Cooklin, “Master Patterns and Grading for Men’s Outsize”, Blackwell Scientific Publications, 1992.
9. Jeenne Price and Bernard Zamkoff, “Grading Techniques for Modern Design” Fairchild Publications, 1990.



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Describe the federal classification of stitches & seams, seam finishes, stitch and seam defects.

CO2: Develop creative designs for the different types of garment components.

CO3: Construct the different types of garment components using suitable construction techniques.

CO4: Construct the different types of garment fasteners using suitable construction techniques.

CO5: Select suitable garment components and fasteners for different garment styles.

Pre Requisite: NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S									
CO2			S									
CO3		S	S									
CO4		S	S									
CO5		S	S									

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Surveys

9 Hours

SEAMS: Definition, Types of seams – Federal classifications, factors to be considered in the selection of seam, seam finishes and seam defects.

STITCHES: Definition, stitch classes - Federal classifications, stitch parameters, factors to be considered in the selection of stitches. Stitching defects.

9 Hours

FULLNESS: Definition, types- Darts – single, double pointed darts, Tucks - pin tucks, cross tucks, piped tucks, shell tucks. Pleats- knife pleats, box pleats, invertible box pleats, Kick pleats. Flare, godets, gathers, shirring, single, double frills and flounces.

HEMMING TECHNIQUES: Definition, types - machine stitched hem and hand-stitched hem.

NECKLINE FINISHES- preparation of bias strip, bias facing, bias binding, fitted facing and French binding.

9 Hours

SLEEVES: Types and construction of sleeves - plain, puffs, gathered, bell, bishop, circular, leg-o-mutton, Magyar sleeves, Raglan sleeves, kimono.

YOKES: Definition – Selection of yoke design, Types and construction of yoke - Simple yoke –



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yokes with or without fullness, midriff yokes, panel yokes, partial yokes.

9 Hours

COLLARS: Classification of collars, Types of collars– flat collars (peter pan collar, scalloped, flared, puritan collar, sailor collar) convertible collar, shirt collar with stand, Mandarin collar, shawl collar.

POCKETS: Types– patch pocket – creating variations, set in pocket- bound pocket, welt pocket, pocket in a seam- front hip pocket, Attaching flap to a patch pocket.

9 Hours

PLACKETS: Inconspicuous plackets - continuous bound placket, two-piece placket, zipper placket – slot seam & lapped seam. Conspicuous plackets - Tailored or Kurtha placket, fly opening – button and buttonhole method, Zipper method.

FASTENERS: Types - button and buttonholes, hooks and eye, snaps, Velcro, eyelets, cords and rivets

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. Mary Mathews, “Practical Clothing Construction Part I and II”, Paprinpack, Madras, 2000.
2. Ruth E.Glock, Grace I. Kunz, “Apparel Manufacturing – Sewn Product Analysis”, Pearson/Prentice Hall, 2005
3. Claire Shaeffer, “Sewing for the Apparel Industry”, Prentice-Hall Inc, New Jersey, 2001
4. Gerry Cooklin, “Garment Technology for Fashion Designers”, Blackwell Science Ltd., 2001.
5. Leila Aitken., “Step By Step Dress Making Course”, BBC Books, 1992
6. Amaden. C. and Crawford, A guide to Fashion Sewing, Fairchild Publications, 2001.
7. Fan.J., Yu.W., and Hunter.L., “Clothing Appearance and Fit: Science and Technology”, The Textile Institute, Manchester, 2004
8. Joseph. H andAmstrong, “Pattern Making for Fashion Design”, Pearson Education Inc, 2005.
9. Sumathi,G.J, “ Elements of Fashion and Apparel Design”, New Age International (P) Ltd, 2005.
10. Federal standards, stitches and seams.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: The learners will acquire the knowledge of fundamental laws of electrical and electronics engineering.

CO2: The students can state the definition of magnetic circuits.

CO3: Students can choose suitable motor for desired application.

CO4: The students have the ability to apply the fundamental laws of magnetic circuits to electrical machines.

CO5: The learners can verify the truth table of digital logic gates.

Pre Requisite : NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M											
CO2	M	M										
CO3	M		M									
CO4		M	M									
CO5		M	M									

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Surveys

ELECTRIC CIRCUITS FUNDAMENTALS:**9 Hours**

Electric current and Ohm's law – Resistance and Resistivity – Relation between Voltages, Current, Resistance and Power - Capacitance – Parallel plate capacitor – Energy stored in a capacitor.

ELECTROMAGNETISM:**9 Hours**

Magnetic field - Field intensity, magnetic flux , Flux density – Permeability – Magnetic effects of electric current – Magnetic circuit – Faraday's laws of Electromagnetic Induction – Self-inductance and Mutual inductance – Energy stored in magnetic field – Magnetic Hysteresis.

AC-CIRCUITS:**9 Hours**

Alternating voltages and current – Sinusoidal waveform – cycle and frequency – RMS value – vector diagram of sine waves of same frequency – Alternating current through Resistance, Inductance and Capacitance – current through series circuits – Power factor – Active and Reactive power – Generation of three phase voltage – Voltages, Currents and Power in Star and Delta connected loads.

ELECTRICAL MACHINES (Qualitative Treatment Only):**9 Hours**

DC motor – Principle of operation – Back-emf and voltage equation – Torque and speed Characteristics of Series and Shunt connected motors – Transformer – Ideal Transformer

relationship – Three phase induction motor – Cage rotor and Wound rotor – Principle of operation – Slip – Torque – Slip characteristics – Single phase induction motors.

ELECTRONIC CIRCUITS:

9 Hours

Semiconductor diode – Half wave and Full wave rectifier – Bipolar Polar Junction transistors – circuit configurations – static characteristics – load line and biasing – simple introduction to amplifiers – Introduction to Binary logic gates – AND, OR, NOT, NAND, NOR, EX-OR & EX-NOR.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. B.L. Theraja, “Fundamentals of Electrical Engineering and Electronics”, S. Chand Publishing, 2012.
2. Thomas L Floyd, “Electronic Devices”, 6th edition, pearson education, 2003.
3. Muthusubramanian.R, Salivahanan.S and Muraleedharan. K.A, “Basic Electrical Electronics and Computer Engineering”, Tata Mcgraw Hill, second edition, 2006.
4. Thyagarajan.T, Sendur Chelvi .K.P, Rangaswamy T.R, “Engineering Basics”, Revised second edition, New Age International P. Ltd publisher.



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L	T	P	C
0	0	3	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Design patterns and garments using various drawing techniques.

CO2: Prepare various color swatches based on color theories.

CO3: Illustrate various garment components, accessories & human anatomy

CO4: Design and present garment designs on croquis.

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			S							S		S
CO2		S	S							S		S
CO3			S							S		
CO4			S					S		S		S

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course-end survey

LIST OF EXPERIMENTS:

1. Motif Development – Design Repeat and positioning
2. Object Drawing and Shading concepts
3. Drape of fabrics and shading with different mediums
4. Preparing swatches for dimensions of colour, different colour theories and harmonies
5. Rendering prints and textures with various fabric constructions (wovens, non-wovens and knit)
6. Drawing different Silhouettes and garment components - sleeves, collars, necklines, cuffs, skirts, pants
7. Human Anatomy- Figure basics, Constant proportions, Shapes and parts of human body. Study of different postures- Head- Face, Eyes, Lips, Nose, Hand - Fingers, Leg - Feet and Toes, Hand and Arms.
8. Normal Drawing - Eight head theory. Fashion Figure Drawing - Drawing croqui figures-stick, geometric, flesh - 8 ½ and 10 head figures.
9. Different postures of male and female figure - ¾ view, back view, side view. Different poses like – S-Pose, X-Pose, and T-pose.
10. Drawing croqui figures using template, model, imagination and photograph.
11. Thematic sketching of garments on croqui figures- Male and female
12. Thematic sketching of garments on croqui figures- Boy and girl

Experiments beyond the syllabus should be conducted

Total: 45 Hours



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U14FTP302 GARMENT COMPONENTS FABRICATION LABORATORY

L	T	P	C
0	0	3	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on operating SNLS machine and construction of garment components.

CO2: Develop patterns using measurements for various garment components.

CO3: Construct garment components using suitable construction technique.

Pre Requisite : NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2	S	S	M									
CO3	S	S	S	S								

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course-end survey

LIST OF EXPERIMENTS

1. Identification of machine parts and functions of Single Needle Lock Stitch (SNLS) machines.
2. Preparing samples for various SPIs and thread tension
3. Preparing samples for basic Hand stitches.
4. Preparing samples for seams
5. Preparing samples for seam finish.
6. Preparing samples for Darts, pleats and tucks
7. Preparing samples for gathers, godets and frills
8. Preparing samples for Necklines – Bias facing, Bias Binding and Fitted facing.
9. Preparing samples for Sleeves – Plain, Puff, Raglan, Kimono, Cap Sleeve
10. Preparing samples for collars – Peter Pan collar, Full shirt collar, Shawl collar.
11. Preparing samples for pockets – Patch Pocket, Bound Pocket and Front Hip Pocket.
12. Preparing samples for plackets – continuous bound placket, 2 piece placket, tailors placket, Fly opening and Zipper.

Experiments beyond the syllabus should be conducted

Total: 45 Hours


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U14EEP311 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB

L	T	P	C
0	0	3	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand and verify the breadboard connections.

CO2: Check the working condition of a cathode ray oscilloscope.

CO3: Understand the basic laws of electric circuits.

CO4: Understand the working of various electronic devices.

CO5: Understand the performance of an amplifier to carryout different operations.

Pre Requisite : NIL

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	W		M								
CO2	M	W		M					M			
CO3			M	M					M			
CO4	M		M						M			
CO5	M		M									

Course Assessment methods:


Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course-end survey

LIST OF EXPERIMENTS:

1. Load Test on DC Shunt Motor
2. Load Test on DC Series Motor
3. Speed Control of DC Shunt Motor
4. Load Test on 3 Phase Induction Motor
5. Load Test on 1 Phase Induction Motor
6. Load Test on single phase transformer
7. Half wave and full wave rectifier
8. Characteristics of CE transistor configuration
9. Characteristics of PN diode
10. Verification of truth table of logic gates

Experiments beyond the syllabus should be conducted

Total: 45 Hours


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L	T	P	C
1	0	1	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Adopt and practice social values as his regular duties.

CO2: Take over the social responsibilities.

CO3: Give solutions and to manage the challenging social issues.

CO4: Voluntarily participate and organize social welfare programmes.

CO5: Explore his ideology of techno social issues and provide the best solution

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							W	W		M		S
CO2								S		M		
CO3							W	M			W	
CO4								W	S	M		W
CO5							M	W				W

Course Assessment methods:

Direct	Indirect
1. Continuous Assessment 2. End Semester Examination	1. Attitude 2. Behavior

ORIGIN OF SOCIETY**5 Hours**

Evolution of universe: Creation theory, Big bang theory, Evolution theory, Permanence theory - Mithya, Maya – Evolution of living being - Evolution of Man – Formation of society and social values.

Practical: Group Discussion on Evolution of Man and formation of society, Panel discussion on Social values - Pancha Bhoodha Navagraha Meditation.

SELF AND SOCIETY**2 Hours**

Duty to self, family, society and world –Realization of Duties and Responsibilities of individuals in the society (Five fold cultures) – impact of social media on present day youth and correction measures.

Practical: Case study – interaction with different professionals.

EDUCATION & SOCIETY**3 Hours**

Education: Ancient and Modern Models.

Practical: Making Short film on impact of education in social transformation.

DISPARITY AMONG HUMAN BEINGS**3 Hours**

Wealth's for humans, Factors leading to disparity in human beings and Remedies.

Practical: Debate on disparity and social values.



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CONTRIBUTION OF SELF TO SOCIAL WELFARE

3 Hours

Participation in Social welfare – Related programmes– Recognized association – Activities for social awareness – Programme by Government and NGOs – Benefits of social service – Balancing the family and social life.

Practical: In campus, off campus projects.

GENERAL PRACTICAL

14 Hours

Ashtanga Yoga: Pathanjali maharishi & Yoga – Involvement – Rules of Asanas -Suryanamaskara (12 Steps)- Meditation.

Standing : Pada Hastasana, Ardha Cakrasana, Trikonasana, Virukchsana (Eka Padaasana)

Sitting : Padmasana, Vakrasana, Ustrasana, Paschimatanasana.

Prone : Uthanapathasana, Sarvangasana, Halasana, Cakrasana,

Supine : Salabhasana, Bhujangasana, Dhanurasana, Navukasana.

Theory : 16 Hours

Tutorial: 14 Hours

Total: 30 Hours

REFERENCES BOOKS:

1. Steven , Weinberg, “**The First Three Minutes**” : A Modern View of the Origin of the Universe (English), Perseus books group,1977.
2. Vethathiri’s Maharishi’s, “**Vethathirian Principles of Life**” The World Community Service Centre, Vethathiri Publications, 2003.
3. Vethathiri’s Maharishi’s, “**Karma Yoga: The Holistic Unity**” The World Community Service Centre, Vethathiri Publications, 1994.
4. Vethathiri’s Maharishi’s, “**Prosperity of India**” The World Community Service Centre, Vethathiri Publications, 1983.
5. Swami Vivekananda, “**The Cultural Heritage of India**” 1stedition, The Ramakirshna Mission Institute of Culture, 1937.
6. Vivekananda Kendra Prakashan Trust, “**YOGA**”, Vivekanandha Kendra Prakashan Trust,Chennai, 1977



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SEMESTER IV



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L	T	P	C
3	1	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Solve a set of algebraic equations representing steady state models formed in engineering problems

CO2: Fit smooth curves for the discrete data connected to each other or to use interpolation methods over these data tables

CO3: Find the trend information from discrete data set through numerical differentiation and summary information through numerical integration

CO4: Predict the system dynamic behaviour through solution of ODEs modeling the system

CO5: Solve PDE models representing spatial and temporal variations in physical systems through numerical methods.

CO6: Have the necessary proficiency of using MATLAB for obtaining the above solutions.

Pre Requisite : Nil.

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S			S								
CO2		S										
CO3				S								
CO4		S										
CO5			S									
CO6					S							

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, Tutorial, End Semester Exam	1. Course –End Survey

INTRODUCTION:**2 Hours**

Simple mathematical modeling and engineering problem solving – Algorithm Design – Flow charting and pseudocode - Accuracy and precision – round off errors

NUMERICAL SOLUTION OF ALGEBRAIC EQUATIONS:**7 Hours**

Solution of nonlinear equations - False position method – Fixed point iteration – Newton Raphson method for a single equation and a set of non- linear equations Solution of linear system of equations by Gaussian elimination, Gauss Jordan method - Gauss Seidel method.

CURVE FITTING AND INTERPOLATION:**7 Hours**

Curve fitting – Method of least squares – Regression Analysis - Newton's forward and backward difference formulas – Divided differences – Newton's divided difference formula - Lagrange's interpolation – Inverse interpolation.



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NUMERICAL DIFFERENTIATION AND INTEGRATION:**6 Hours**

Numerical differentiation by using Newton's forward, backward and divided differences – Numerical integration by Trapezoidal and Simpson's 1/3 and 3/8 rules – Numerical double integration.

NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS: 10 Hours

Initial value problems - Single step methods: Taylor's series method – Truncation error – Euler and Improved Euler methods – Fourth order Runge – Kutta method – Multistep methods: Milne's predictor - corrector method.

NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS (PDEs):**13 Hours**

PDEs and Engineering Practice – Laplace Equation derivation for steady heat conduction – Numerical solution of the above problem by finite difference schemes – Parabolic Equations from Fourier's Law of Transient Heat Conduction and their solution through implicit schemes – Method of Lines – Wave propagation through hyperbolic equations and solution by explicit method.

Use of MATLAB Programs to workout solutions for all the problems of interest in the above topics.

Theory: 45 Hours**Tutorial: 15 Hours****Total: 60 Hours****REFERENCES**

1. Steven C. Chapra and Raymond P. Canale, "Numerical Methods for Engineers with Programming and Software Applications", Sixth Edition, WCB/McGraw-Hill, 1998.
2. John H. Mathews and Kurtis D. Fink, "Numerical Methods using Matlab", Fourth Edition, Prentice Hall of India, 2004.
3. Gerald C. F. and Wheatley P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2002.
4. Sastry S.S, "Introductory Methods of Numerical Analysis", Third Edition, Prentice – Hall of India Pvt Ltd, New Delhi, 2003.
5. Kandasamy P., Thilagavathy K. and Gunavathy K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2007.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Play a important role in transferring a healthy environment for future generations

CO2: Analyze the impact of engineering solutions in a global and societal context

CO3: Discuss contemporary issues that results in environmental degradation and would attempt to provide solutions to overcome those problems

CO4: Ability to consider issues of environment and sustainable development in his personal and professional undertakings

CO5: Highlight the importance of ecosystem and biodiversity

CO6: Paraphrase the importance of conservation of resources

Pre Requisite : Nil.

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						S	S					
CO2						S	S					
CO3							M					
CO4						W	M	W				
CO5	M						M					
CO6						M	W					

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Survey

INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL**RESOURCES****10 Hours**

Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and overutilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

ECOSYSTEMS AND BIODIVERSITY**14 Hours**

ECOSYSTEM : Concept of an ecosystem – Structure and function of an ecosystem: Producers, consumers and decomposers, Energy flow in the ecosystem, Food chains, food webs and ecological pyramids - Ecological succession – Introduction, types, characteristic features, structure and



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function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) –

BIODIVERSITY : Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity – Biogeographical classification of India – Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, National and local levels – India as a mega-diversity nation – Hot-spots of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

ENVIRONMENTAL POLLUTION

8 Hours

Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – Solid waste Management: Causes, effects and control measures of urban and industrial wastes – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: floods, earthquake, cyclone and landslides.

SOCIAL ISSUES AND THE ENVIRONMENT

7 Hours

From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns, case studies – Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – Wasteland reclamation – Consumerism and waste products – Environment Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness

HUMAN POPULATION AND THE ENVIRONMENT

6 Hours

Population growth, variation among nations – Population explosion – Family Welfare Programme – Environment and human health – Human Rights – Value Education – HIV / AIDS – Women and Child Welfare – Role of Information Technology in Environment and human health – Case studies.

Field Work

Visit to local area to document environmental assets- river / grassland / hill / mountain, visit to local polluted site- urban / rural / industrial / agricultural, study of common plants, insects, birds, study of simple ecosystems-pond, river, hill slopes etc.,

Theory: 45 Hours

Total: 45 Hours

REFERENCE

1. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co., 2013
2. Masters G.M., and Ela W.P., Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad India., 2002
4. Trivedi R.K and Goel P.K., “Introduction to Air pollution” Techno-science Publications. 2003
5. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media. 1996



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6. Cunningham, W.P., Cooper, T.H., & Gorhani E., Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001
7. Wager K.D., Environmental Management, W.B. Saunders Co., Philadelphia, USA, 1998
8. Townsend C., Harper J and Michael Begon, "Essentials of Ecology", Blackwell science Publishing Co., 2003
9. Syed Shabudeen, P.S. Environmental chemistry, Inder Publishers, Coimbatore. 2013



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on the processes involved in apparel production and preparation of spec sheet

CO2: Recognize the properties and characteristics of raw material for apparel manufacture

CO3: Gain knowledge in pattern layout planning and preparation of construction flow for apparel production

CO4: Identify the problems of fit and indicate remedies

CO5: Acquire knowledge on apparel finishing processes

Pre Requisite :

U14FTT304 Garment Components Fabrication

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Survey

PROTO SAMPLES & SPEC SHEETS:

9 Hours

Apparel production process- flow process. Analyzing specification sheet- sample preparation and approval. Preparation of specification sheet for children's frock, ladies top, and men's trousers- working diagrams, seam and stitch specification and size chart. Preparation of proto pattern and developing production pattern.

RAW MATERIAL SELECTION:

9 Hours

Factors affecting selection of fabric- precautions while handling different fabrics while laying, marking, cutting and sewing. Sewing Thread properties and seam performance –seam strength , seam elasticity, sewing problems. Components- label, linings, Interlining, Elastic, shoulder pads, Seam binding and tape – performance properties of the above components.

PATTERN LAYOUT PLANNING:

9 Hours

Importance of grain in garments, principles and types of layout, transferring patterns on fabrics. Listing garment components and planning the construction process flow for children's frock, ladies top, and men's trousers

FITTING:

9 Hours

Standards of good fit - ease, line, grain, set, balance. Steps in assembling a blouse and checking fit. Solving fitting problems in Top, skirt, trouser by pattern alteration.



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APPAREL FINISHING PROCESS:**9 Hours**

Fusing and pressing- definition, process, requirements, equipments and methods. Packing - Function, types of package forms, Types of packaging materials, packaging methods, packing shipping equipments.

Theory: 45 Hours**Total: 45 Hours****REFERENCES**

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998.
3. Laing R.M., Webster J, "Stitches and Seams", The Textile Institute, Manchester, 2004.
4. Gerry Cooklin, "Garment Technology for Fashion Designers", Blackwell Science Ltd., 2001.
5. Claire Shaeffer, "Sewing for Apparel Industry", Prentice Hall, 2000
6. Mary Mathews, "Practical Clothing Construction, Part I and II", Paperback Ed., Madras, 2000
7. Joseph. H and Amstrong, "Pattern Making for Fashion Design", Pearson Education Inc, 2005
8. Fan.J., Yu.W., and Hunter.L., "Clothing Appearance and Fit: Science and Technology", The Textile Institute, Manchester 2004.
9. Leila Aitken., "Step By Step Dress Making Course", BBC Books, 2004.
10. Ruth E Glock and Grace I Kunz, "Apparel Manufacturing - Sewn Product Analysis", Prentice Hall, New Jersey, Fourth Edition, 2005



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U14FTT402 APPAREL MACHINERY AND EQUIPMENT

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in different methods of spreading of fabrics with respect to type of fabric and to calculate the marker efficiency.

CO2: Describe the basic principles of working of different types of cutting machineries used in apparel production

CO3: Develop skill in setting and adjustment parts of sewing machines

CO4: Develop skills for recognize various parts and their working principles in advanced garment sewing machines.

CO5: Acquire knowledge on special machineries used in apparel production

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S				M							
CO2	S				M							
CO3		M										
CO4		M										
CO5	S											

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

SPREADING MACHINES:**8 Hours**

Types of Fabric Packages. Types of Fabrics – One Way – Two Way Fabrics – Their effect on spreading . Methods of Fabric spreading. Spreading equipments – Computerized spreaders. Marker planning, Marker efficiency, Factors affecting marker efficiency. Marker duplicating methods – Computer aided marker making.

CUTTING MACHINES:**8 Hours**

Introduction to cutting machines. Types and functions of cutting machines – straight knife, round knife, band knife cutting machines. Notches, drills, die cutting machines. Computerised cutting machines. Maintenance of cutting machines. Common defects in cutting and their remedies. Latest Developments.

SEWING MACHINE- SNLS:**10 Hours**

Basic parts of sewing machine –primary and auxiliary parts and their functions. Bobbin case / Bobbin hook, Throat plate– Take up devices – Tensioners – Feed dog – Pressure foot. Types of needles – Parts of needles and their function. Needle finishes. Adjustments of Stand height – pedal – Needle Bar – Stitch length selection – Feed timing – Needle and Bobbin Thread Tension – Stitch cycle timing diagram. Common defects and remedies. Special attachments in sewing machines – guides, folders, stackers, trimmers, ziggers.



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MULTI THREAD SEWING MACHINES:**10 Hours**

Over lock machines - Types of Over lock machines. Parts and their functions. Threading diagram for over lock machines. Stitch Cycle Diagram for over lock machines – Adjustment of Needle height, Feed dog height, angle, Differential feed ratio, Position of upper and lower knives, loopers. Defects and Remedies.

Flat lock machines – Types. Parts and their functions. Threading diagram of flat lock machines – Stitch cycle diagram. Adjustment of parts – Needle height, feed dog height, differential feed ratio, loopers. Maintenance of flat lock machines. Defects and Remedies.

SPECIAL PURPOSE SEWING MACHINES:**9 Hours**

Introduction to different special purpose sewing machines. Basic working of Feed of Arm, Button Hole sewing, button sewing, Bar tack, blind stitch machines. Embroidery sewing machines. Latest developments in sewing machines. Sewing machine maintenance - Maintenance schedule for various machines. Maintenance audit.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001.
3. Singer, "Sewing Lingerie", Cy DeCosse Incorporated, 1991.
4. Laing R.M. and Webster J, "Stitches and Seams", The Textile Institute, Manchester, 1999
5. Technical Advisory Committee of AAMA, " A New Look at Apparel Mechanization", 1978.
6. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998.



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U14FTT403 FABRIC STRUCTURE AND DESIGN

L	T	P	C
3	1	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO 1: Acquire knowledge on the elements of woven fabric design.

CO2: Develop elementary fabric weave structures.

CO3: Acquire knowledge on colour theory, modifications of colour and colour and weave effects.

CO4: Develop structures for complex woven fabric.

CO5: Describe the characteristics, properties and applications of woven fabric structures

Pre Requisite :

U14FTT101 Fiber Science and Yarn Technology

U14FTT202 Weaving Technology

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S								S		
CO2		S	S									
CO3			S							S		
CO4		S	S									
CO5		S										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, Tutorial, End Semester Exam	1.Course end survey

BASIC WEAVES:**9+3 Hours**

Elements of woven design, Construction of elementary weaves – plain – warp rib- weft rib – mat. Twills – modification of twills. Satin – sateen and their derivatives. Ordinary and Brighton honey comb– Huckaback. Crepe weaves.

BEDFORD CORDS AND MOCK LENO:**9+3 Hours**

Plain faced – twill faced. Wadded – modifications. Welt - piques: wadded piques – Loose back and fast back welts and piques. Mock leno – Distorted mock –leno.

DOBBY AND JACQUARD: Basic Dobby, Jacquard Design. Spot figuring – arrangement of figuring for dobby and jacquard.

COLOR THEORY:**9+3 Hours**

light and pigment theory – modification of color – color combination – application of colors – color and weave effects.

EXTRA FIGURED WEAVES: Extra warp and extra weft figuring. Extra warp and extra weft figuring with two colors.

BACKED FABRICS:**9+3 Hours**

Warp and weft back – reversible and non-reversible.

PILE FABRICS: warp pile – fast wire pile – terry weaves - terry stripe – terry check. Weft pile: plain back – twill back velveteen – Lashed pile corduroy – Weft plush – Length, density and fastness of pile.



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DOUBLE CLOTH:**9+3 Hours**

Classification – self stitched – face to back – back to face – Combination face to back and back to face stitched double cloth. Wadded double cloth – weft and warp Wadded double cloth – Center warp & Weft Stitched double cloth.

Theory: 45 Hours**Tutorial: 15 Hours****Total: 60 Hours****REFERENCES**

1. Gokarneshan.N., “ Fabric Structure and Design”, New Age International (P) Limited, 2011.
2. Grosicki Z., “Watson’s Textile Design & Color: Elementary weaves & Figure”, Blackwell Science, Commerce place, 1998.
3. H.Nisbet, “Grammar of textile Design”, Tarporevala sons & Co. Pvt. Ltd., 1994.
4. W.S. Murphy, “Textile weaving & Design”, Abhishek Publications, 2000



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U14MET407 BASICS OF MECHANICAL ENGINEERING

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Explain principles of thermodynamics, renewable energy and power plants

CO2: Discuss the working of IC engines and air conditioning and refrigeration.

CO3: Understand and explain the various manufacturing processes and power transmission

CO4: Demonstrate basic manufacturing process

CO5: Explain various types of power transmission

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		M										
CO3	W											
CO4	M											
CO5	M											

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end survey

LAWS OF THERMODYNAMICS**9 Hours**

First law of thermodynamics – statement and application, steady flow of energy equation, Second law of thermodynamics. Heating and Expansion of Gases, Expression for work done, internal energy, hyperbolic and polytropic processes. Properties of Steam, Dryness fraction, latent heat, total heat of wet steam.

POWER PLANTS**9 Hours**

Classification of Power Plants, Steam, Diesel, nuclear and Hydro Power Plants. Types of turbines, working of a single stage impulse and reaction turbine.

Alternate Sources of Energy: (Solar, Wind, Tidal, Geothermal, Ocean Thermal Energy Conversion (OTEC). Wind/ Solar grid fed power plant, Solar /Water air heaters – Techno-economics of power plants and energy sources.

INTERNAL COMBUSTION ENGINES**9 Hours**

Classification of IC engines, Main components of IC engines, working of a 4 stroke and 2 stroke petrol and diesel engine, differences between 4 stroke and 2 stroke engine.

Refrigeration and Air Conditioning: principle of vapour compression and vapour absorption refrigeration systems. Air conditioning, terminology and classifications. Humidification and Air conditioning.

MANUFACTURING PROCESSES**9 Hours**

Basic principles of Arc and Gas Welding, Soldering and Brazing, Extrusion, Forging, Rolling, and Drawing Processes. Milling – Types, Operations and Equipments.



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POWER TRANSMISSION

9 Hours

Types of drives, belt drives – flat and V belts, rope drives, chain drive, gear drives – spur, helical, bevel and worm gears (Descriptive treatment only) – gear trains, simple and compound.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Shanmugam G, Palanichamy M S, “Basic Civil and Mechanical Engineering”, Tata McGraw Hill Company, New Delhi, 2nd Edition, 2000.
2. Venugopal.K. and Prabu Raja, “Basic Mechanical Engineering”, Anuradha Publications, Chennai, 2007.
3. Sarkar B. K., “Thermal Engineering” Tata McGraw Hill Company, New Delhi. 2000
4. Rao N., “Manufacturing Technology: Foundry, Forming and Welding”, Tata McGraw Hill Co., New Delhi, Paperback Edition. 1998 James Brown, “Advanced Machining Technology Handbook”, McGraw Hill, New York, 1998



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U14FTP401**FASHION DESIGN LABORATORY – II**

L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Demonstrate skill on tools of fashion designing software to prepare digital apparel designs.

CO2: Sketch apparel designs using designing software.

CO3: Create woven and knitted designs on Lectra Kaliedo software

CO4: Create printed designs on Lectra Kaliedo software

CO5: Appreciate significance of communicating informative graphics all through apparel production process

Pre Requisite :

U14FTT301 Concepts of Fashion and Design

U14FTP301 Fashion Design Laboratory-I

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					S							
CO2			S									
CO3					S							
CO4					S							
CO5									M	S		

Course Assessment methods:


Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course End Survey

LIST OF EXPERIMENTS

1. Creating motives and textures in Adobe Photoshop
2. Creating motives and croiques in Adobe Illustrator
3. Development of woven design in Adobe Photoshop/ Adobe Illustrator
4. Creating garments on croiques in Adobe Photoshop/ Adobe Illustrator
5. Development of T-shirt design in Adobe Photoshop/ Adobe Illustrator
6. Development of woven designs in Lectra-Kaliedo weave software
7. Development of knitted designs in Lectra-Kaliedo knit software
8. Development of printed designs in Lectra-Kaliedo print software
9. Creating a mood board and a color board based on a theme
10. Preparation of digital designs for children's wear and accessories
11. Preparation of digital designs for women's wear and accessories
12. Preparation of digital designs for men's wear and accessories

Experiments beyond the syllabus should be conducted.

Total: 60 Hours


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L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Determine appropriate sewing parameters for any desired quality of stitching of apparels

CO2: Apply skills in identifying the procedure for preparing the specified quality of stitching by selecting the required sewing parameters

CO3: Demonstrate skill to troubleshoot when faulty stitches occur.

Pre Requisite :

U14FT7304 Garment Components Fabrication

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S										
CO2			S	S								
CO3			S									

Course Assessment methods:


Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course end survey

Course Content**LIST OF EXPERIMENTS**

1. Determination of Threading path and Stitches per inch in Single Needle Lock Stitch Machine.
2. Adjustment of needle height, feed dog height and feed dog angle in single needle lock stitch machine
3. Determination of Threading path and stitches per inch in over lock stitch machine.
4. Adjustment of needle thread and looper thread tension and feed ratio in over lock stitch machine.
5. Determination of Threading path and stitches per inch in Flat lock stitch machine.
6. Adjustment of needle thread looper thread tension and feed ratio in Flat lock stitch machine.
7. Adjustments in button sewing machine for button hole type, size of button
8. Adjustments in Button Holing machine for type of button hole, stitches per inch
9. Adjustments in Feed off the arm Machine.
10. Adjustments in Flat lock elastic attaching machine
11. Adjustments in Electronic Zig – Zag Sewing machine.
12. Adjustment in bar tacking machine.

Experiments beyond the syllabus should be conducted.

Total: 60 Hours


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U14FTP403 FABRIC STRUCTURE AND DESIGN ANALYSIS LABORATORY

L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Identify woven fabric designs and its commercial name by fabric feel

CO2: Analyze and calculate the woven fabric parameters

CO3: Analyze and calculate the knitted fabric parameters

Pre Requisite :

U14FTT101 Fiber Science and Yarn Technology

U14FTT202 Weaving Technology

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S										
CO2		S	M	S						S		
CO3		S	M	S						S		

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course end survey

LIST OF EXPERIMENTS

1. Analysis of fabrics – Commercial name & fabric appreciation

Woven Fabric Analysis


2. Plain
3. Twill
4. Satin and Sateen
5. Huck a back
6. Honey comb
7. Extra figured weaves
8. Jacquard design
9. Double cloth
10. Pile fabric –Terry weave

Knitted fabric analysis

11. Single Jersey
12. Rib

Experiments beyond the syllabus should be conducted.

Total: 60 Hours


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U14GHP401 NATIONAL AND GLOBAL VALUES

(Common to all branches of Engineering and Technology)

L	T	P	C
1	0	1	1

Course Outcomes**After successful completion of this course, the students should be able to****CO1:** Act as a good and responsible citizen.**CO2:** Conserve and protect eco cycle.**CO3:** Voluntarily work with global welfare organization and provide solution for global peace.**CO4:** Invent his Technical design by considering humanity and nature.**Pre Requisite :**

U14GHP301 Social Values

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							M	S		M		S
CO2							S					
CO3							W	M	M	M		
CO4							S	S			S	

Course Assessment methods:

Direct	Indirect
1. Continuous Assessment 2. End Semester Examination	1. Attitude 2. Behavior

ROLE OF A RESPONSIBLE CITIZEN**4 Hours**

Citizen - its significance–National and Global perspectives.

Practical: Group discussion on National and Global values.**GREATNESS OF INDIAN CULTURE****2 Hours**

Emerging India – past and present, about Culture, Morality and spirituality– Beauty of Unity in diversity - Impact of western culture in India and Indian culture over other countries.

Practical: Demonstration and impact measurements of simple and good actions.**GLOBAL WELFARE ORGANISATIONS****2 Hours**

Education – Health – Nature – Peace

Practical: Organizing an event linking with one of the Organizations In campus /off campus.**PRESERVING NATURE****2 Hours**

Appreciating the flora and fauna on Earth - Importance of Ecological balance – Conservation.

Practical: Trekking, field visit.**GLOBAL PEACE****4 Hours**

One World and One Humanity - Global Peace.

Global personalities: Thiruvalluvar, Vallalar, Vivekanadar, Mahatma Gandhi, Vethathiri Maharishi – Plans for world peace.**Practical:** Group discussion on individual plans for world peace.**GENERAL PRACTICAL****16 Hours**

Simplified physical Exercise – Kayakalpa practice (Follow up practice) – Meditayion -


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Theory & Practice

Pranayama : Bhastrika, Kapala Bhati, Nadi suddhi, Sikari, Sitali.

Mudhra : Chin Mudhra, Vayu Mudhra, Shunya Mudhra, Prithvi Mudhra, Surya Mudhra, Varuna Mudhra, Prana Mudhra, Apana Mudhra, Apana Vayu Mudhra, Linga Mudhra, Adhi Mudhra, Aswini Mudhra.

Theory : 14 Hours

Practical : 16 Hours

Total: 30 Hours


REFERENCES BOOKS:

1. Drunvalo Melchizedek, "The Ancient Secret of the Flower of Life", Vol. 1, Light Technology Publishing; First Edition edition (April 1, 1999)
2. Dr.M. B. Gurusamy, "Globalisation – Gandhian Approach" Kumarappa Research Institution, 2001.
3. Vethathiri's Maharishi's, "*Karma Yoga: The Holistic Unity*" The World Community Service Centre, Vethathiri Publications, 1994.
4. Vethathiri's Maharishi's, "*World peace*" The World Community Service Centre, Vethathiri Publications, 1957.
5. Vethathiri's Maharishi's, "*Atomic Poison*" The World Community Service Centre, Vethathiri Publications, 1983.
6. Vethathiri's Maharishi's, "*The World Order Of Holistic Unity*" The World Community Service Centre, Vethathiri Publications, 2003.
7. Swami Vivekananda, "*What Religion Is*" 41th edition, The Ramakrishna Mission Institute of Culture, 2009.



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SEMESTER V



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on basic principles in designing and developing garment patterns.

CO2: Developing skills in preparation of garments by implementing the various measurements, pattern development and construction methods for children's, women's and men's garments.

CO3: Trace the knowledge on the different varieties of woven and knitted garments.

CO4: Assess the suitability of garment patterns, fabrics, seams to fit the individuals.

CO5: Assess the comfort ability parameters on woven and knitted garments

Pre Requisite :

U14FTT301 Concepts of Fashion and Design

U14FTT303 Basic Pattern Making and Adaptation

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		S	M									
CO3	M			M								
CO4	M											
CO5									M			

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Survey

CHILDREN'S WEAR:**10 Hours**

Designing and pattern development- measurements-standard size charts for children's wear. Quality requirements for selecting suitable fabric, seams and stitches for children wear. Step-by-step garment drafting process and construction sequence – baba suit, romper, baby frock.

WOMEN'S WOVEN WEAR:**10 Hours**

Designing and pattern development – measurements - standard size charts for women's wear. Quality requirements for selecting suitable fabric, seams and stitches for women's wear. Step-by-step garment drafting procedure and construction sequence – salwar kameez, skirts - plain, gored, pleated and blouses - saree blouse, skirt blouse, katori blouse.

WOMEN'S KNIT WEAR:**9 Hours**

Designing and pattern development- measurements – standard size charts for women's knitwear. Step-by-step garment drafting procedure and construction sequence-corsets, camisole, nighty and dresses - princess line, empire line, tent dress and maternity wear.

MEN'S WOVEN WEAR:**9 Hours**

Designing and pattern development – measurements – standard size charts for men's wear. Quality requirements for selecting suitable fabric, seams and stitches for men's wear. Step-by-step garment drafting procedure and construction sequence –Trousers-pleated, jeans, cargos, full sleeve shirt and single breasted coat.



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MEN'S KNIT WEAR:**7 Hours**

Designing and pattern development – measurements – standard size charts for men's knitwear. Step-by-step garment drafting procedure and construction sequence – T-shirt, elastic shorts and briefs.

Theory: 45 Hours**Total: 45 Hours****REFERENCES**

1. Helen Joseph and Armstrong, "Pattern Making for Fashion Design", Pearson Education, 2005.
2. Winifred Aldrich, "Metric Pattern Cutting for Men's Wear", Blackwell Science, 2000.
3. Winifred Aldrich, "Metric Pattern Cutting for Children's Wear and Baby Wear", 3rd Edition, Blackwell Science, 2001.
4. Singer, "Sewing Pants That Fit", Cowles Creative Publishing Inc., 1989.
5. McKelvey Kathryn, "Fashion Source Book", Blackwell Science, 1994
6. Gerry Cooklin, "Garment Technology For Fashion Designers", Blackwell Science, 2000.
7. Claire Shaeffer, "Fabric Sewing Guide", Chilton Book Company - Radnor, Pennsylvania, 1997.
8. "The Complete Book of Sewing", DK Publishers, London, 1996.
9. Mary Mathews, "Practical Clothing Construction" Part I and II, 2003.
10. Raul Jewel, "Encyclopedia of Dress Making", APH Publishing Corporation, New Delhi, 2000.
11. Zarpkar.K.R., "Zarpkar system of cutting" Navneet publications ltd, Mumbai, 2010.



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U14FTT502 SURFACE ORNAMENTATION AND ACCESSORIES

L	T	P	C
3	1	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in classification and parameters for raw materials and tools for surface ornamentation

CO2: Classify and identify different hand embroidery stitches and traditional embroidery

CO3: Recognize and identify the machine embroidery types and processes

CO4: Understand the embroidery production processes and quality parameters in computerized embroidery

CO5: Acquire knowledge on types of accessories and its production processes

Pre Requisite :

U14FTT301 Concepts of Fashion and Design

U14FTP301 Fashion Design Laboratory

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	S										
CO2	M	S	M									
CO3	S	S										
CO4	S	M										
CO5	M	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, Tutorial, End Semester Exam	1. Course End Survey

INTRODUCTION:

7+2 Hours

Embroidery – meaning and importance- Types and Classification. Study and compatibility of needles, thread, frames, backing materials and fabrics for embroidery. Attachments to sewing machines for embroidery.

HAND EMBROIDERY:

10+4 Hours

Hand embroidery stitches - classification - running, couching, button hole, satin, long and short, wheat, chain, stem, herringbone, cross stitch, knotted stitches, fish bone. Indian traditional embroideries – Phulkari, Kasuti, Kashida, Kutch work, Chikkankari, Kantha, Tribal embroidery stitches, designs, colors and materials used.

MACHINE EMBROIDERIES AND SURFACE ORNAMENTATION:

10+4 Hours

Machine Embroideries and Surface ornamentation – types - eyelet work, cutwork, lace work, drawn thread work, drawn fabric work, patch work, mirror work, applique, shaded embroidery, shadow work, badala work, bead and sequins work and bobbin thread embroidery.

COMPUTERIZED EMBROIDERY:

10+3 Hours

Computerized Embroidery Machine – Multi Head Embroidery Machine - Functions and Features. Embroidery Production Process – designing, punching and digitizing, special effects, networking. Selection of thread, color and stitches for computer controlled embroidery machines. Study of frames. Special attachments. Quality control aspects.

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FASHION ACCESSORIES:**8+2 Hours**

Fashion Accessories – footwear, handbags, belts, gloves, hats, scarves, Jewellery - designing, selection of materials, product development and production.

Theory: 45 Hours**Tutorial: 15 Hours****Total: 60 Hours****REFERENCES**

1. Parul Bhatnagar, “Traditional Indian Costumes and Textiles”, Abhishek Publications, Chandigarh, 2004.
2. Jay Diamond and Ellen Diamond, “Fashion, Apparel, Accessories, Home Furnishings” Pearson Prentice Hall, New Jersey, 2007.
3. Usha Srikant, “Designs for a lifetime”, Samata Enterprises, Mumbai, 2002.
4. Shailaja D. Naik, “Traditional Embroideries of India”, A.P.H Publishing Corporation, New Delhi, 1996.
5. Gini Stephens Frings, “Fashion - From Concept to Consumer”, Prentice Hall, New Jersey, 1999.
6. Sheila Paine, “Embroidered Textiles”, Thames and Hudson Ltd., 1990.
7. Gail Lawther, “Inspirational Ideas for Embroidery on Clothes and Accessories”, Search Press Ltd., 1993.
8. Training Manual for Embroidery Machine Operators, TAJIMA, UIET, Tirupur, 2003.
9. Training Manual for Embroidery Machines, Barudan, Tirupur, 2002.



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire Knowledge on the biomechanical engineering design of clothing

CO2: Recognize and associate objective and subjective evaluation of clothing fit

CO3: Recognize and associate the Effect of fibre properties, yarn structure and fabric construction on the fabric appearance

CO4: Recognize and associate the Effect of fibre properties, yarn structure and fabric construction on the, dimensional stability and the fabric comfort

CO5: Acquire Knowledge and associate the Effect of fibre properties, yarn structure and fabric construction on the fabric Serviceability and fabric handle

Pre Requisite :

U14FTT101 Fibre science and yarn Technology

U14FTT403 Fabric structure and Design

U14FTT505 Textile And Apparel Quality Evaluation

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S										
CO2	S	S										
CO3	S	S										
CO4	S	S										
CO5	S	S										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1.Course End survey

BIOMECHANICAL ENGINEERING DESIGN OF CLOTHING**6 Hours**

Introduction to bio mechanical engineering design of textile and fashion products- Comfort and compression therapy- design of socks

SIZING SYSTEMS AND EVALUATION OF CLOTHING FIT::**12 Hours**

Definition, Development of sizing system, International sizing, Principles of sizing system. Definition of fit, Importance of Fit, Standards of Fit, influence of clothing Fit, Testing methods for dimensional Fit, Objective and Subjective evaluation of fit.

AESTHETICS AND APPEARANCE:**9 Hours**

Selection of fibre, yarn structure and fabric construction; their effect on pilling, fastness, lustre overall appearance and Shade variation. Fabric properties related to appearance.

DIMENSIONAL STABILITY: Study of factors that affect Hygral expansion, relaxation shrinkage, swelling shrinkage, felting shrinkage, dimensional stability to dry cleaning and dry heat with respect to fibre properties.

SERVICEABILITY:**9 Hours**

Study of Factors affecting properties such as Snagging, abrasion resistance, tearing strength, tensile strength, bursting strength, fusing, Seam strength and slippage with respect to fiber properties, yarn structure and fabric design.



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FABRIC HANDLE AND COMFORT:**9 Hours**

Objective evaluation of fabric hand by KES and FAST-. Comfort-Effect of fibre properties, yarn structure, fabric design, fabric construction and treatments on the fabric properties such as thermal conductivity and warmth, air permeability, breathability, moisture transport – wetting and wicking; clothing comfort – thermal comfort, heat and moisture transfer, moisture sensations; tactile comfort – pressure sensations.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Engineering Apparel Fabrics and Garments, Woodhead Publishing Textiles, by J Fan, L. Hunter, 2009
2. Saville B.P, “Physical Testing of Textiles”, The Textile Institute, Wood head Publishing Ltd, Cambridge, 1999
3. Fan J., Yu .W and Hunter L ., Clothing Appearance and fit, Textile Institute, Woodhead Publishing Limited, England, 2004
4. Ed. Postle R., Kawabata.S and Niwa M., “Objective Evaluation of Fabrics”, Textile Machinery Society, Japan, Osaka, 1983.
5. Sandra Betzina, Fast Fit-Easy Pattern Alterations for Every Figure, The Taunton press inc ., Singapore, 2003
6. Biomechanical engineering of textile and clothing, Edited by Y. Li and X-Q. Dai, Woodhead Publishing Limited, England, 2006



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U14FTT504 TEXTILE CHEMICAL PROCESSING

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge chemical processing of cotton and blended materials.

CO2: Identifying the suitable process to process the fibre, yarn and fabrics through preparatory and dyeing processes.

CO3: Analyse the parameters and identifying the recipes for chemical processing of different materials.

CO4: Acquire Knowledge and Analyse the parameters for Printing techniques

CO5: Acquire knowledge on the eco-friendly processes and the effluent treatments.

Pre Requisite :

U14CH7204 Chemistry for Textiles

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		M										
CO3		S										
CO4	M	M										
CO5	M		S				S					

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1.Course End survey

PRETREATMENTS:**9 Hours**

Introduction to wet processing. Process sequence in wet processing for wovens and knits. Singeing – electric and gas singeing. Desizing – chemical and enzymatic. Scouring – alkaline and enzymatic. Bleaching – hypochlorite and peroxide bleaching, optical whitening. Mercerizing – tension, tensionless and tubular mercerization.

DYEING:**12 Hours**

Introduction- Dyeing equipments – jigger, winch, soft flow, jet dyeing machine, J-box, padding mangles, package dyeing machine and garment dyeing machine. RFT dyeing. Classification of dyes. Dyeing of cotton fabrics using direct, reactive, vat and sulphur dyes. Dyeing of polyester (carrier, HTHP and thermo sol) and cellulosic blends (one bath and two bath process). Fastness properties of dyes.

PRINTING:**7 Hours**

Print paste - ingredients and preparation. Styles of printing - direct style of printing on cotton using pigments and reactive dyes, discharge style of printing cotton using pigments on reactive ground, resist style of printing cotton on reactive ground, Tie and dye, batik. After treatments of printed goods.

METHODS OF PRINTING:**7 Hours**

Block, Stencil, Roller, Rotary, Flat bed, Transfer and Chest printing. Screen Making. Special prints – kadi, rubber, foam, glitter, leather, foil, flock and pearl. Latest developments in printing.



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QUALITY ASSURANCE AND ECO – FRIENDLY WET PROCESSING: 10 Hours
Need for Quality control – areas of Quality control in wet processing (Water, PH, Temperature, MLR, Time) – computer color matching. Importance of Eco – friendly wet processing, List of banned dyes and chemicals, German ban, Eco-Labels, Eco- Testing. Textile effluent treatment.
Theory : 45 Hours **Total: 45 Hours**

REFERENCES

1. V A Shenai Technology of Textile Processing- Vol. III, , 1975, Sevak Publications
2. V.A. Shenai, “Technology of Dyeing –Volume VI”, Sevak Publications, Bombay, 2000.
3. “Chemical Processing of Textiles-I” Nodal Centre for Upgradation of Textile Education (NCUTE), 2000.
4. John Shore, “Cellulosics Dyeing”, Society of Dyers and Colourists, Mumbai, 2005
5. Lesile W.C. Miles, “Textile printing”, Society of Dyers and Colourists, Mumbai, 2003
6. “Chemical technology In the pre-treatment Processes of textiles” , S.R. Karmakar, ISBN: 0-444 50060-1 Nov, 1999
7. Datye K.V. and Vaidya A.A., “Chemical Processing of Synthetic Fibres and Blends”, John Wiley and Sons, Newyork, 1984.
8. “Chemical Preparatory processing in Textiles” NCUTE Programmes series, march 13-14, 2000.
9. “Dyes and pigments”: New research, Arnold r. Lang Editor , Nova Science Publishers, Inc. New York January 8, 2013
10. “Eco – Friendly Textiles - The German Ban”, NITRA Publishing Ltd., 1996.
11. “Eco-Friendly Textiles Challenges to the Textile Industry”, Textile Committee. March 10 1995.



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U14FTT505 TEXTILE AND APPAREL QUALITY EVALUATION

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in sampling techniques of fibers, yarns and fabrics and also in various method of measuring yarn number

CO2: Gain knowledge in principles of working of yarn testing instruments

CO3: Gain knowledge in principles of working of fabric testing instruments

CO4: Acquire knowledge on testing of fabric handle properties

CO5: Acquire knowledge on testing instruments used for accessories and fastness properties of fabrics

Pre Requisite :

U14FTT401 Apparel Production Technology

U14FTT403 Woven Fabric Manufacture and Structure

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		M										
CO3		S										
CO4	M	M										
CO5	M		S				S					

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1.Course End survey

SAMPLING TECHNIQUES AND YARN NUMBERING SYSTEM

9 Hours

Definition – random, biased sampling. Sampling techniques for fibre, yarn and fabric. Definition of Moisture Regain and Moisture Content. Standard conditions for testing samples.

Yarn count – Definition. Yarn Numbering System – Direct, indirect. Simple calculations.

YARN TESTING

9 Hours

Determination of yarn count, yarn twist- single and folded yarns. Measurement of yarn hairiness- optical, singeing and hairiness tester- Causes for yarn hairiness. Classification of variation. Methods of measuring evenness – Black board, ASTM standards, Cutting and weighing methods. Electronic capacitance – evenness tester – Uster standards.

Yarn faults – classification – Classimat. Measurement of yarn strength – Single yarn strength tester – Tensorapid, Tensojet - lea strength tester. Count Strength Product (CSP), its significance.

FABRIC TESTING - MECHANICAL PROPERTIES

9 Hours

Fabric tensile strength tester – raveled strip method – Grab methods. Fabric tear strength tester – Ballistic strength tester – Hydraulic bursting strength tester. Fabric Abrasion Resistance - Martindale abrasion tester. Fabric Pilling - I.C.I Pillbox tester. Crimp – Influence of crimp on fabric properties – Shirley crimp tester

FABRIC TESTING – AESTHETICS AND COMFORT PROPERTIES

9 Hours

Fabric Drape - Drape meter. Fabric Stiffness - Shirley Stiffness tester, Fabric crease resistance

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and crease recovery measurements. Fabric Permeability - Fabric air permeability tester and water permeability tester.

APPAREL AND ACCESSORY TESTING

9 Hours

Seam strength and seam slippage testing. Peel bond strength testing- Button, Zipper strength testing. Colour fastness testing – Washing fastness- Rubbing fastness – Light fastness. Apparel dimensional stability – spirality, skewing and its measurement.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Arindam Basu, “Textile Testing – Fibre, Yarn and Fabric”, The South India Textile Research Association, Coimbatore, 2001.
2. B.P. Saville, “Physical Testing of Textiles”, Woodhead Publishing Limited, 1999.
3. Grover E G and Hamby D. S, “Hand Book of Textile Testing and Quality Control”, Wiley Eastern Pvt. Ltd., New Delhi, 2000.
4. Sundaram V, “Hand book of Textile Testing”, CTRL Publication, Bombay, 2003.
5. Booth, J.E., “Principles of Textile Testing”, CBS Publishers and Distributors, 2002.
6. BSI, “BSI Hand books”, British Standard Institution, Manchester, 2007
7. BIS, “BIS Hand Books”, Bureau of Indian standards, Delhi, 2007.



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U14FTP501 APPAREL PRODUCTION LABORATORY- I

L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Develop skills in fashion illustration and designing for childrens & ladie's wear.

CO2: Preparing basic blocks for different measurements and apply the grading techniques.

CO3: Choose the suitable garment styles and

CO4: Apply the construction techniques for developing children and ladies garments and preparing the operation flow chart for the garments.

CO5: Estimating the cost particulars for the developed children and ladies garments

Pre Requisite :

U14FTT301 Concepts of fashion & design

U14FTP301 Fashion Design Laboratory - 1

U14FTT303 Basic pattern making and adaptation

U14FTT304 Garment components fabrication

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										
CO2	S	S	M									
CO3		S	S	S								
CO4			M	S					S	W	M	M
CO5			M	S					S	W	M	M

Course Assessment methods:


Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course End Survey

LIST OF EXPERIMENTS:

1. Development of basic block patterns–top, skirt and bifurcated garments and grading of any one basic pattern
2. Designing and developing pattern for Baby set- Jabla, panty, bib and bonnet.
3. Construction of Baby set- Jabla, panty, bib and bonnet
4. Designing and developing pattern for Rompers
5. Construction of Rompers
6. Designing and Developing Pattern for Ladies Skirt and Top
7. Construction of Ladies Skirt and Top
8. Designing and Developing Pattern for Ladies Salwar
9. Construction of Ladies Salwar
10. Designing and Developing Pattern for Ladies Kameez
11. Construction of Ladies Kameez
12. Marker Planning for any one garment

Experiments beyond the syllabus should be conducted.

Total: 60 Hours


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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquiring knowledge on bleaching, dyeing and printing process

CO2: Estimation and application of chemicals and dyes for processing the textile materials.

CO3: Demonstrate ability to formulate appropriate shade and process parameters of chemical process.

CO4: Apply the different types of machines for the chemical processing

CO5: Acquiring knowledge on fastness properties of dyed materials.

Pre Requisite :

U14CHT204 Chemistry for Textiles

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		M		S								
CO3	M	S		M								
CO4		M										
CO5		M										

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course End Survey

LIST OF EXPERIMENTS:

1. Bleaching of cotton using Hydrogen peroxide.
2. Dyeing of cotton with direct dyes on woven/ knitted fabric.
3. Dyeing of cotton with Reactive dyes on woven/ knitted fabric.
4. Dyeing of cotton with Vat dyes on woven/ knitted fabric.
5. Dyeing of protein fibres with Acid dyes.
6. Stripping and re-dyeing of cotton fabric.
7. Dyeing of Polyester using carrier.
8. Identification of dyes.
9. Direct style of printing on cotton fabrics.
10. Discharge style- printing on cotton.
11. Resist style-printing on cotton.
12. Determination of colour fastness of dyed fabrics using launderometer and crock meter.

Experiments beyond the syllabus should be conducted.

Total: 60 Hours

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in basic working principles of testing instruments

CO2: Develop skills in preparing samples for various types of experiments and to conduct experiments.

CO3: Analyze and interpret the data obtained from the testing instruments

CO4: Conclude based on the standards and present the results

CO5: Applying different testing machines for testing purposes.

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		S		S								
CO3		S		S								
CO4				S						M		
CO5	S											

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course End Survey

LIST OF EXPERIMENTS

1. Determination of Yarn Count and Lea Strength
2. Determination of Single / Ply Yarn Twist
3. Determination of Yarn Appearance Grade
4. Determination of Fabric Abrasion Resistance
5. Determination of Fabric Tensile Strength
6. Determination of Color Fastness to Rubbing - Crock meter
7. Determination of Fabric Stiffness and Crease Recovery Angle
8. Determination of Fabric bursting strength and fabric Drape.
9. Determination of fabric pilling.
10. Determination of fabric tear strength.
11. Determination of colorfastness to perspiration.
12. Determination of shrinkage of woven and knitted fabrics.

Experiments beyond the syllabus should be conducted.

Total: 60 Hours

SEMESTER VI



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand the ethical theories and concepts

CO2: Understanding an engineer's work in the context of its impact on society

CO3: Understand and analyze the concepts of safety and risk

CO4: Understand the professional responsibilities and rights of Engineers

CO5: Understand the concepts of ethics in the global context

Pre Requisite: Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M		M			S		S				
CO2				S				S	M			
CO3						S		S				
CO4						S		S				M
CO5				S		S						

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1.Course End Survey

ENGINEERING ETHICS AND THEORIES**9 Hours**

Definition, Moral issues, Types of inquiry, Morality and issues of morality, Kohlberg and Gilligan's theories, consensus and controversy, Professional and professionalism, moral reasoning and ethical theories, virtues, professional responsibility, integrity, self respect, duty ethics, ethical rights, self interest, egos, moral obligations.

SOCIAL ETHICS AND ENGINEERING AS SOCIAL EXPERIMENTATION**9 Hours**

Engineering as social experimentation, codes of ethics, Legal aspects of social ethics, the challenger case study, Engineers duty to society and environment.

SAFETY**9 Hours**

Safety and risk – assessment of safety and risk – risk benefit analysis and reducing risk – the Three Mile Island and Chernobyl case studies. Bhopal gas tragedy.

RESPONSIBILITIES AND RIGHTS OF ENGINEERS**9 Hours**

Collegiality and loyalty – respect for authority – collective bargaining – confidentiality – conflicts of interest – occupational crime – professional rights – employee rights – Intellectual Property Rights (IPR) – discrimination.

GLOBAL ISSUES AND ENGINEERS AS MANAGERS, CONSULTANTS AND LEADERS**9 Hours**

Multinational Corporations – Environmental ethics – computer ethics – weapons development – engineers as managers – consulting engineers – engineers as expert witnesses and advisors – moral leadership – Engineers as trend setters for global values.

Theory : 45 Hours**Total: 45 Hours**


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REFERENCES

1. Mike Martin and Roland Schinzinger, “Ethics in Engineering”. (2005) McGraw-Hill, New York.
2. John R. Boatright, “Ethics and the Conduct of Business”, (2003) Pearson Education, New Delhi.
3. Bhaskar S. “Professional Ethics and Human Values”, (2005) Anuradha Agencies, Chennai.
4. Charles D. Fleddermann, “Engineering Ethics”, 2004 (Indian Reprint) Pearson Education / Prentice Hall, New Jersey.
5. Charles E. Harris, Michael S. Protchard and Michael J Rabins, “Engineering Ethics – Concepts and cases”, 2000 (Indian Reprint now available) Wadsworth Thompson Learning, United States.



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U14FTT601 APPAREL PRODUCT DEVELOPMENT

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on segments of fashion industry and able to classify apparel products, influence of customer, and different generations behind the costume changes

CO2: Define knowledge on developing fashion concepts such as concept generation, concept screening, line concept etc. Create fashion idea, manipulation of design elements.

CO3: Ability to identify creative design, develop prototype, line adoption. Knowledge on technical design.

CO4: Acquire skills on product positioning strategy, sizing and fit in material selection, final assembly and finishing, garment presentation.

CO5: Acquire knowledge on defining proto development – fabric sourcing and selection. Analysis of functional and aesthetic of fabrics and trims. Visualization and communication design on to manufacturability.

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S	S								
CO2	S	S	S	S								
CO3	M	S	S	S	M							
CO4	S	S	S									
CO5		S	S		M					M		

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Survey

FASHION INDUSTRY OVERVIEW :**9 Hours**

Segments of the fashion industry – history and categories, Classification of apparel products. Background to the world of fashion- influence of the customer; different generations and motivations behind the changes.

DEVELOPING FASHION CONCEPT:**9 Hours**

Design logic of apparel products, concept generation, concept screening. Line concept – Synthesize current issues, describe fashion trends, establish line direction, describe materials, identify group concepts and analyze current line. Principles of creative fashion ideas. Manipulation of Design Elements - silhouette, proportion, pattern, garment details, accessories, texture, prints, colour, fabric.

LINE DEVELOPMENT AND PRESENTATION:**9 Hours**

Creative design - Develop designs, Create prototype. Line adoption – Determining styles and balancing assortments. Technical design – perfect styling and fit, engineer production patterns, samples, costing and grade patterns. Presentation: Review for adoption, line review, line / style release.



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ANALYSIS OF PRODUCT DEVELOPMENT:**9 Hours**

Product Positioning Strategy – Sizing and fit in material selection – Final assembly and finishing – Garment presentation.

PROTO DEVELOPMENT:**9 Hours**

Fabric Sourcing and Selection. Analysis of functional and aesthetic characteristics of fabrics and trims - Co-ordinating with availability, ability to enhance product aesthetics and functionality and cost. Visualization and Communication design into manufacturability.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Maurice J. Johnson and Evelyn C. Moore, “Apparel Product Development”, Second Edition, Prentice Hall Upper saddle river, New Jersey, 2001.
2. Ruth E Glock and Grace I Kunz, “Apparel Manufacturing - Sewn Product Analysis”, Prentice Hall, New Jersey, Fourth Edition, 2005.
3. Kathryn McKelvey and Janine Munslow, “Fashion Design: Process, Innovation and Practice”, Blackwell Publishing, USA, 2005.
4. Donald R. Lehmann, Russell S. Winer, “Product Management”, M.C. Graw Hill International, 1996
5. Mastudaira T and Suresh M.N., “Design Logic of Textile Products”, Textile Progress, Textile Institute, Manchester, 2007.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on fashion industry and types of apparels industry and business concepts adopted.

CO2: Understand types of apparel markets, marketing research and strategies.

CO3: Gain knowledge on sourcing, supply chain management, and resource planning

CO4: Acquire knowledge on role and responsibilities of merchandiser. Communication with stake holders, product development, line planning and presentation.

CO5: Developing knowledge on merchandise management.

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1										S	W	
CO2			M							M	W	
CO3			M						S	S	W	
CO4		M	M						S	S	W	
CO5									M	M	W	

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

APPAREL INDUSTRY OVERVIEW:**10 Hours**

Organization of the Apparel Business: Introduction to apparel industry. Types of apparel exporters. Business concepts applied to the apparel industry.

MARKETING:**9 Hours**

Functional organization of an apparel firm. Responsibilities of a marketing division - marketing objectives and Strategies - Marketing research - Types of markets: Retails and wholesale strategies for merchandise distribution- retailers - sourcing flows and practices. Marketing plan. Labeling and licensing.

SOURCING:**8 Hours**

Need for sourcing - sourcing materials - Manufacturing Resources Planning - Material Resource Planning. Vendor Management- Sourcing strategies - Overseas sourcing. Supply chain and demand chain analysis - Materials management for quick response.

MERCHANDISING:**10 Hours**

Definition of merchandising, Functions of merchandising division - Role and responsibilities of a export merchandiser - different types of buyers. Communications with the buyers - awareness of current market trends – product development –Tech pack analysis - Order confirmation process Export Merchandising -. Classification of exporters - Manufacturer exporter, Merchant exporter, Job worker(CM/CMT). Introduction to buying house. Retail Merchandising- Merchandising strategies, Roles and Responsibilities of retail merchandisers.



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MERCHANDISE MANAGEMENT:**8 Hours**

Product management - model stock plan, constraining factors, types of suppliers and selection criteria, category management, merchandise management planning in retail and export segments. Brand Management - Brand documentation- Brands and brand awareness. Documentation on brands. Brand formulation. Brand Licencing.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Philip Kotler, Kelvin Lane Keller, Abraham Koshy and Mithileshwar Jha, "Marketing Management a South Asian Perspective", Pearson Education India, 2006.
2. Evelyn C Moore, "Math for Merchandising", Wiley Eastern Inc., 2002.
3. John Donnellan "Merchandise Buying and Management", Farichild Publications, inc., New York, 2002
4. Ruth E Glock and Grace I Kunz, "Apparel Manufacturing", Prentice Hall, New Jersey, Fourth Edition, 2005.
5. "The Textile Industry: Winning strategies for the New Millennium", Volume II, Textile Institute., 1999



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U14FTT603**APPAREL PRODUCTION PLANNING AND CONTROL**

L	T	P	C
3	1	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on basic techniques of production planning & control in garment industry

CO2: Identify the suitable plant site location, layout and production system for apparel industry based on style and quantity of merchandise

CO3: Prepare the flow process grids, control forms and scheduling charts for production control in apparel industry

CO4: Explain the cut order planning and material management system for apparel industry

CO5: Determine the capacity planning and line balancing techniques to achieve balanced production

Pre Requisite:

U14FTT401 Apparel Production Technology

U14FTT402 Apparel Machinery and Equipment

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		S	M								S	
CO3		S		S	S					S	M	
CO4		S		S	S							
CO5	S	S		S	M						S	

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, Tutorial, End Semester Exam	1. Course end survey

PRODUCTION PLANNING AND CONTROL:**9 Hours**

Definition, Objectives of production control, relationship of production control to the functional areas of a manufacturing organization.

Pre planning: Pre-production functions, Importance of Preproduction function. Lead Time, Product development - steps from prototype to production sample. Product data management.

PLANT LAYOUT:**8 Hours**

Plant site location. Plant Layout - definition – types of production layout, criteria for evaluation of a plant layout. Basic production line layout. Determining minimum space requirement, Government regulations for plant layouts.

APPAREL MANUFACTURING SYSTEMS:**8+5 Hours**

Section Production systems - whole garment production system, Progressive bundle system, Unit production system, Multiple flow system, modular manufacturing systems – their advantages and disadvantages. Guide lines for choosing suitable production system.



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Flow Process Grids and Charts – Flow process grid construction, flow process grids for production control.

Cut Production Analysis: Cut order planning – types of spreads, spreading methods, marker utilization, economic cut quantities.

MATERIAL MANAGEMENT: **10+5 Hours**

Just in Time Production system (JIT), Optimized Production Technology (OPT), Inventory Modeling – Economic order quantity (EOQ)

Control Forms: Functions of cutting order, cutting ticket, bundle control sheet.

Principles of Scheduling: scheduling charts – GANTT chart, backlog graph. Scheduling techniques Network representation – CPM and PERT

10+5 Hours

PLANT LOADING AND CAPACITY PLANNING: Determination of machine requirements for a new factory -calculation of labor requirements

LINE BALANCING: determination and allocation of man power and machines for balanced production in existing plant for a given target, application of line balancing techniques – balance control.

Theory: 45 Hours

Tutorial: 15 Hours

Total: 60 Hours

REFERENCES

1. Garg R.K, and Sharma V., “Production Planning and Control Management”, Dhanpat Rai Publishing, 2003.
2. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications, 1998.
3. Telsang (Martand) “Industrial Engineering and Production Management” S. Chand & Company Limited, 2008
4. Rajesh Bheda “ Managing Productivity of Apparel Industry” CBI publishers and distributors, New Delhi 2002.
5. David J Tyler, “ Material Management in Clothing Production”, Prentice Hall, New jersey, 1991.
6. Carr Harold, Latham Barbara, “The Technology of Clothing Manufacture”, Om Book Service, 2004.
7. Bracken Bury, “Knitted Clothing Technology”, Om Books Service, 1999.
8. Gerry Cooklin, “Introduction to Clothing Manufacture”, Blackwell Science Ltd.,2005.
9. Gerry Cooklin, “Garment Technology for Fashion Designers”, Om Books service, 1997.
10. Churter, A.J., “Introduction to Clothing Production Management”, Oseney Mead, 2001.



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on types of finishes on fabrics and garments.

CO2: Analyse the different conditions and chemicals need for finishing of materials

CO3: Acquiring knowledge on Denim Finishes and advanced finishes.

CO4: Acquiring knowledge on un-conventional finishes and their applications.

CO5: Acquire knowledge on Quality assurance and stains and their removal in apparel.

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2	M	M	W									
CO3	S	M	M									
CO4	S											
CO5	M	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

INTRODUCTION:**9 Hours**

Reason for finishing, types and classification of finishing, Mechanical finishes- Calendering, Sanforizing, Compacting & Stentering requirements for garment finishing. Garment Dyeing Machines for Finishing. Selection of sewing thread, accessories w.r.t garment dyeing and finishing. Preparation of fabrics for garment dyeing and finishing.

FUNCTIONAL FINISHING:**9 Hours**

Water repellent/proof, flame retardant, heat resistant, mildew proof, moth proof, anti-static, soil release, UV protection, anti microbial and elastomeric finish (without compaction). Resin finishing – durable press, wash-n-wear, wrinkle free, silicone finishing and their methods of application.

SPECIAL FINISHES:**9 Hours**

Process conditions, machineries, chemicals used for various special effects-stone wash, acid wash, enzyme wash, bio- polishing, sand blasting, ozone and laser fading, tinted denim, over dyed denim, reverse denim, pseudo denim, stretch denim, peach skin effect, quick wash denim, vintage wash, enzyme- soda wash, dextrose- caustic wash, sueding wash, golf ball wash, tie 'n' wash, marble wash and crush finish.

UNCONVENTIONAL FINISHING METHODS:**9 Hours**

Plasma treatment, finishing using micro capsules, nano and electro chemical treatment of textile materials, self cleaning and phase changing materials.

APPAREL CARE:**9 Hours**

Types and characteristics of stains, Identification of stains, selection of stain removers, Stain removal methods - Oil, colour matter, Garment laundering equipments and procedures, Use of



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care labels and standards / norms for care labels.

Quality Assurance in finished garments: Quality requirements, Standards and Limitations for finished garments and accessories.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Nomeia D, souza., "Fabric Care", New Age International (P) Ltd, Chennai, 1998.
2. Shenai V A, "Technology of Textile Finishing", Sevak Publications, Mumbai, 1995.
3. Dr.G.Nalankilli, Dr.S.Jayaprakasam, "Textile Finishing" SSMIIT Staff's and Student's Co-op society. 1997
4. "Garment Wet Processing Technical Manual", AATCC/SDC, 1994. Whittall N S, "Laundering and Dry Cleaning", vol.8, Textile Progress, 1996.
5. Pradip V Mehta, "An Introduction to Quality Control for the Apparel Industry", ASQC Quality Press, 1992.
6. Goldman R F and Lyle D S, "Performance of Textiles" John Wiley and Sons, New York 1987.
7. Hall A J, "Textile Finishing", Elsevier Publishing Co. Ltd, 1986.
8. Richard A Scott, "Textiles for Protection", The Textile Institute, Wood head Publishing Limited, CRC Press. 2005.
9. W.D. Schiendler and P.J. Hauser, "Chemical Finishing of Textiles", The Textile Institute, Wood Head, 2004.



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U14FTP601 APPAREL PRODUCTION LABORATORY- II

L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Develop skills in fashion illustration and designing for ladies & men's wear

CO2: Preparation of basic blocks for ladies wear

CO3: Develop patterns as per the required styles for ladies & men's garments and practice grading for different sizes

CO4: Practice construction of apparel, outline construction flow process for various ladies & men's garments

CO5: Estimate fabric consumption by marker making and costing of apparels

Pre Requisite :

U14FTT301 Concepts of fashion & design

U14FTP301 Fashion Design Laboratory - 1

U14FTT303 Basic pattern Making and Adaptation

U14FTT304 Garment Components Fabrication

U14FTP501 Apparel Production Laboratory - I

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										
CO2	S	S	M									
CO3		S	S	S								
CO4			M	S					S	W	M	M
CO5			M	S					S	W	M	M

Course Assessment methods:


Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course End Survey

LIST OF EXPERIMENTS:

1. Development of basic block patterns–top, skirt and bifurcated garments and grading of any one
2. Designing and Developing Pattern for Brassier and Panties
3. Construction of Brassier and Panties
4. Designing and Developing Pattern for Choli
5. Construction of Choli
6. Designing and Developing Pattern for Men's Formal Shirt
7. Construction of Men's Formal Shirt
8. Designing and Developing Pattern for Men's Formal Trousers
9. Construction of Men's Formal Trousers
10. Designing and Developing Pattern for Knitted Basic T-shirt
11. Construction of Knitted Basic T-shirt
12. Marker Planning for any one garment

Experiments beyond the syllabus should be conducted

Total: 60 Hours


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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire skill on application of Computer aided design software to design apparels and accessories.

CO2: Acquire skill on application of Computer aided pattern drafting, grading software to draft and grade patterns of different apparels

CO3: Acquire ability to create and manipulate marker plan

Pre Requisite :

1. U14FTT303 Basic Pattern Making and Adaptation
2. U14FTP501/601 Apparel Production Laboratory-I/II

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S							S	M		
CO2	S	S							S	M		
CO3	S	S			S				S	M		

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Alumni Survey 2. Employer Survey

LIST OF EXPERIMENTS:

1. Design a Children's wear including accessories.
2. Design a ladies party wear including accessories
3. Design a Men's Formal wear including accessories
4. Develop design, pattern, grading for children's wear – Baby frock using a one way fabric of 38" and 42" width.
5. Develop design, pattern, grading for children's wear – Rompers using a two-way fabric of 38" and 42" width.
6. Develop design, pattern, grading and marker plan for a Ladies top with fabric of 44" and 52" width. Calculate the marker efficiency.
7. Develop design, pattern and marker plan for a Men's Basic T shirt of 48" fabric width. Calculate the marker efficiency.
8. Develop design, pattern, and grading and marker plan for Men's Formal Trouser using fabric of 60" and 72" width. Calculate the marker efficiency.
9. Develop design, pattern, and grading and marker plan for Ladies Full Gown using fabric of 48" width. Calculate the marker efficiency.
10. Develop design, pattern, grading and marker plan for a Ladies Skirt using plaid fabric of 38" and 60" width. Calculate the marker efficiency.



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11. Develop design, pattern, grading and marker plan for a Men's Full arm shirt using fabric of 60" and 72" width. Calculate the marker efficiency.
12. Develop design, pattern, grading and marker plan for Salwar Kameez using fabric of 60" and 72" width. Calculate the marker efficiency.

Experiments beyond the syllabus should be conducted

Total: 60 Hours

L	T	P	C
0	0	3	1

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Imparting the role of communicative ability as one of the softskills needed for placement

CO2: Developing communicative ability and softskills needed for placement

CO3: Making students Industry-Ready through inculcating team-playing capacity

Pre-requisite:

1. U14ENT101 Functional English I

2. U14ENT201 Functional English II

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				M							M	
CO2				W						M	S	
CO3				S						W	S	

Course Assessment methods:

Direct	Indirect
1. Presentation, Role Play, Mock interview, GD etc.	Course end survey

GRAMMAR IN COMMUNICATION**9 Hours**

Grammar and Usage – Building Blocks, Homonyms, Subject and Verb Agreement, Error Correction - Grammar Application, Framing Questions – Question words, Verbal Questions, Tags, Giving Replies –Types of Sentences, Listening Comprehension –Listening and Ear training

ASSERTIVE COMMUNICATION**9 Hours**

Listening Comprehension in Cross-Cultural Ambience, Telephonic Conversations/Etiquette, Role Play Activities, Dramatizing Situations- Extempore – Idioms and Phrases.

CORPORATE COMMUNICATION**9 Hours**

Video Sensitizing, Communicative Courtesy – Interactions – Situational Conversations, Time Management, Stress Management Techniques, Verbal Reasoning, Current Affairs – E Mail Communication / Etiquette.

PUBLIC SPEAKING**9 Hours**

Giving Seminars and Presentations, Nuances of Addressing a Gathering - one to one/ one to a few/ one to many, Communication Process, Visual Aids & their Preparation, Accent Neutralization, Analyzing the Audience, Nonverbal Communication.

INTERVIEW & GD TECHNIQUES**9 Hours**

Importance of Body Language –Gestures & Postures and Proxemics, Extempore, Facing the Interview Panel, Interview FAQs, Psychometric Tests and Stress Interviews, Introduction to GD, Mock GD Practices.

Practical : 45 Hours**Total: 45 Hours****REFERENCES**

1. Bhatnagar R.P. & Rahul Bhargava, "English for Competitive Examinations", Macmillan Publishers, India, 1989, ISBN: 9780333925591




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2. Devadoss K. & Malathy P., “Career Skills for Engineers”, National Book Publishers, Chennai, 2013.
3. Aggarwal R.S., “A Modern Approach to Verbal & Non–Verbal Reasoning”, S.Chand Publishers, India, 2012, ISBN : 8121905516



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SEMESTER VII



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire broad knowledge of the various industrial engineering methods and tools associated with manufacturing systems and human factors

CO2: Demonstrate modern industrial engineering methods and scientific solutions to apparel manufacturing towards economic, environmental, and societal context

CO3: Perform as industry leaders in the global marketplace, capable of successfully planning, controlling, and implementing large-scale projects

CO4: Understand and apply the principles of science, technology, engineering, and math involving industry-relevant problems.

CO5: Acquire skills to investigate, experiment and solve problem in context with productivity improvement and material handling

Pre Requisite :

U14FTT401 Apparel Production Technology

U14FTT304 Garment components fabrication

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S									S		
CO2					S	S				S		M
CO3				M						S	S	
CO4	M			M								
CO5		M		M								

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

INTRODUCTION:**9 Hours**

Scope of industrial engineering in apparel Industry, role of industrial engineers.

Productivity: Definition - Productivity, Productivity measures .Reduction of work content due to the product and process, Reduction of ineffective time due to the management, due to the worker. Causes for low productivity in apparel industry and measures for improvement.

WORK STUDY:**9 Hours**

Definition, Purpose, Basic procedure and techniques of work-study.

Work environment – Lighting, Ventilation, Climatic condition on productivity. Temperature control, humidity control, noise control measures. Safety and ergonomics on work station and work environment

Material Handling – Objectives, Classification and characteristics of material handling equipments, Specialized material handling equipments.

METHOD STUDY:**9 Hours**

Definition, Objectives, Procedure, Process charts and symbols. Various charts – Charts indicating process sequence: Outline process chart, flow process chart (man type, material type



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and equipment type); Charts using time scale – multiple activity chart. Diagrams indicating movement – flow diagram, string diagram, cycle graph, chrono cycle graph, travel chart
MOTION STUDY: Principle of motion economy, Two handed process chart, micro motion analysis – therbligs, SIMO chart.

WORK MEASUREMENT:

9 Hours

Definition, purpose, procedure, equipments, techniques. Time study - Definition, basics of time study- equipments. Time study forms, Stop watch procedure. Predetermined motion time standards (PMTS). Time Study rating, calculation of standard time, Performance rating – relaxation and other allowances. Calculation of SAM for different garments, GSD.

WORK STUDY APPLICATION:

9 Hours

Application of work study techniques in cutting, stitching and packing in garment industry. Workaids in sewing, Pitch diagram, Line balancing, Capacity planning, scientific method of training.

Theory: 45 Hours

Total: 45 Hours

REFERENCES

1. Johnson Maurice “Introduction of Work Study”, International Labour Organization, Geneva, 2005.
2. V.Ramesh Babu “Industrial Engineering in Apparel Production” Woodhead publishing India PVT Ltd, 2012
3. Kiell B.Zandin, “Maynard’s “Industrial Engineering Hand Book”, Fifth edition, Mc Graw Hill, NewYork, 2001.
4. Sharma (S K) ;Sharma (Savita “Work Study And Ergonomics “S. K. Kataria & Sons (publishers) ISBN: 818845834, 2010
5. Khanna.O.P., “Industrial Engineering and Management”, Danpat Rai and Sons,1987.
6. Ralph M. Barnes, “Motion and Time Study Design and Measurement of Work”, 7th Edition, John Wiley and Sons, New York, 1980.
7. Khan.M.I., “Industrial Ergonomics”, PHI LTD. Eastern Economy Edition, 2010.
8. Kantilla Ila, “Apparel Industry In India”, Prentice Hall, 1990.
9. Rajesh Bheda, “Managing Productivity in Apparel Industry “CBS Publishers & Distributors, ISBN8123909217, 9788123909219, 2008



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U14FTT702 SOCIAL COMPLIANCE FOR APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on scope and need of social compliance

CO2: Understand the compliance norms on labour and safety

CO3: Understand the compliance norms on Health and Environment

CO4: Understand the norms on wage compliance

CO5: Comprehend practice of ethical trading and international compliance

Pre-requisites: NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					M							
CO2					M					M		
CO3					M					M		
CO4		S								M		
CO5		S								M		M

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

DEFINITION: SCOPE AND NEED OF SOCIAL COMPLIANCE:**9 Hours**

Social Compliance - concept, need, benefits for industry, workers, society. Social accountability and Corporate Social responsibility - scope and need. Social Compliance in supply chain management.

GENERAL NORMS ON LABOUR AND SAFETY:**12 Hours**

Conventions on discrimination, forced labour, child labour- Direction and risk in the supply chain. ILO convention on child labour, worst Form of child labour, Hazardous child labour , Environment and climate, health and safety – safety norms and measures to be enforced for safe working Environment., working hours- norms, remuneration-minimum wages Conventions on Acquired Immune Deficiency Syndrome (AIDS) and Gender.

HEALTH AND ENVIRONMENT COMPLIANCE:**8 Hours**

Minimum age Convention, freedom of association, collective bargaining, corruption and bribery – effect and risk in the supply chain. Global Reporting Initiatives (GRI) sustainability reporting guide line. Organization for Economics Co- operation of Development (OECD) guide lines for multi national discrimination.

WAGE COMPLIANCE:**9 Hours**

Freedom of association, collective bargaining agreements (C87, C98 – ILO) compensation – norms applicable in India. Working hours – code of conduct.



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ETHICAL TRADING AND INTERNATIONAL COMPLIANCE:**7 Hours**

Ethical Trading Initiative (ETI). Basic code of labour practice. World wide Responsible Apparel Product (WRAP) purposes, Wrap Principle, certification process, SA 8000. National and international regulating organizations – OSHA, WRAP, GOTS, OEKO TEX. Corporate Social Responsibility (CSR) – mandatory requirements – benefits to company, labour and society.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

- 1 Rajesh Chhabara, “Social Accountability”, Ava softech Pvt. Ltd., 2005
2. Rebocak Leifziger, “SA 8000: The first decade”, Greech Leaf Publishers, May 2009.
- 3.<http://www.ilo.org.in>.
- 4.<http://www.endchildlabor.com>
- 5.<http://www.labour.nic.in>
- 6.<http://www.unicef.org>
- 7.<http://www.indianchild.com>
- 8.<http://www.paycheck.in>
- 9.<http://www.sa-intl.org>.
- 10.<http://www.saasaccreditation.org>.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on the concepts of quality assurance, its importance in manufacturing process, and realizing the same through sampling-based inspection.

CO2: Acquire knowledge on statistical tools, apply them for quality assurance, and compare the results with international standards for apparel products.

CO3: Acquire knowledge on quality control of material and processes in apparel manufacturing through the use of tolerance limits and process standards.

CO4: Understand and execute quality requirements of different standard organization.

CO5: Control and manage quality requirements of customer, Buyer and Standards organization in Apparel Industry.

Pre Requisite :

U14FTT401 Apparel Production Technology

U14FTT603 Apparel production planning and control

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M			S						M	M	
CO2				S						M	M	
CO3	S			S	M			M		M	M	
CO4			S		S							
CO5				S	S							

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

INTRODUCTION

9 Hours

Quality definition – Quality control and its necessity. Quality assurance - difference between quality assurance and quality inspection. Inspection and importance - Functions of inspection – Types of inspection - 100% inspection, spot checking. Sampling arbitrary sampling and statistical sampling. Comparison of 100% inspection and sample inspection. Systems of inspection – raw material inspection, in process inspection and final inspection – AQL

STATISTICAL QUALITY CONTROL AND QUALITY MANAGEMENT

9 Hours

Quality tools - Cause-and-effect diagram, Check sheet, Control chart, Histogram, Pareto chart, Scatter diagram and flow chart. Control charts and their application.

Quality Circles and Total Quality Management. Classification of defects – product defect, process defect. Grading visual defects. Defect zones in apparels.

INTERNATIONAL STANDARDS

9 Hours

Product Standards and Process standards - ISO, ASTM, BS, ANSI, ASA, BIS, ASQ, AATCC, GOTS, Oekotex. Specifications and standards for raw material, accessories, manufacturing process, testing and services. Standard performance specifications for women's, men's, children's wear – woven and knitted.



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TYPES OF CONTROL DOCUMENTS**9 Hours**

Raw material purchase and utilization, spreading, cutting, sewing and packing. Quality control for fabrics – different types of defects in fabrics – classification into major and minor faults – fabric inspection systems – 4 point, 10 point systems. Quality control in pattern making, marker planning, cutting, sewing and packing.

QUALITY CONTROL IN APPAREL PRODUCTION**9 Hours**

Tolerance limits and quality standard for fabric, cutting, sewing in garment industry. Tolerances and quality standard for finished garments. Quality control of labels, buttons, zippers, fasteners. Quality control systems and standards for packing and packed goods. Quality cost analysis - Cost of quality – cost of conformance - cost of non-conformance.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Jacob Solinger, “Apparel Manufacturing Handbook”, Prentice Hall, 1998
2. Pradip V. Mehta, P.E, Satish K. Bharadwaj, “Managing Quality in Apparel Industry”, Newage International (P) Ltd, Publishers, 2006
3. Sammel Eliou, “Production Planning and Control”, Wiley Eastern Pvt. Ltd. 2007
4. M. Mahajan, “Statistical Quality Control”, Dhanpat Rai and Co. (P) Ltd, 2007
5. Billie J. Collier, Helen H. Epps, “Textile Testing and Analysis”, Prentice Hall, New Jersey, 1999
6. Mario Bona, “Textile Quality” Texilia, 1994.



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U14FTT704 COSTING IN APPAREL INDUSTRY

L	T	P	C
3	1	0	4

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in basic principles of cost accounting

CO2: Describe the factors that determine the cost of apparel products

CO3: Apply knowledge in textile raw materials (yarn and fabric), accessories and manufacturing methods to derive the cost of basic apparel products

CO4: Acquire knowledge in financial management in apparel industry

CO5: Acquire knowledge in budgeting process in apparel industry

Pre Requisite :

U14FTT101 Fiber Science and Yarn Technology

U14FTT202 Weaving Technology

U14FTT302 Knitting Technology

U14FTT304 Garment Components Fabrication

U14FTT401 Apparel Production Technology

U14FTT504 Textile Chemical Processing

U14FTT604 Apparel Finishing and Care

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S								S	S	
CO2		S					S				S	
CO3	S	S		S							S	S
CO4		S									S	S
CO5		S							S		S	

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, Tutorial, End Semester Exam	1. Course End Surveys

COST ACCOUNTING**10 Hours**

Objectives- responsibility of accounting, uses of cost accounting. Elements of cost. Direct material, Direct labour, Factory over head. Cost behavior patterns in apparel industry. Fixed variable, semi variable. Estimating and costing- importance- difference between estimating and costing

RAW MATERIAL AND CMT COST:**10+5 Hours**

Factors that determine the cost of garments – material cost – cost of yarn, cost of fabric production, cost of processing. Width, design and lot size of fabric affecting cost.

Different types of accessories used in garments and their cost -Thread, Button, Zippers, Interlining etc. Packing and labeling cost – different types of labels and packing materials.

Cost of components – cutting cost – making and trim cost (CMT cost) – CMT cost for different types of garments. Shipment cost.

GARMENT PRICING:**9+8 Hours**

Determining pricing of apparel products: Price elasticity of demand and supply, sample costing- marginal revenue and marginal cost, cost plus pricing methods; Full cost pricing, conversion cost


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pricing, differential cost pricing ,variable cost pricing ,direct cost pricing. Derivation of cost of apparel products-woven/knits.

COST VOLUME PROFIT ANALYSIS:

8 +2 Hours

Break even analysis. Profit and loss statement, Balance sheet. Ratio analysis. Sales mix by garment style. Effect of volume change. Price / volume analysis. Depreciation- Calculation of depreciation.

BUDGETING FOR APPAREL INDUSTRY:

8 Hours

Budgeting principles for the apparel industry, fixed vs. flexible budget, master budget, limitations of budgets.

Theory: 45 Hours

Tutorial: 15 Hours

Total: 60 Hours

REFERENCES

1. Maurice Johnson and E. Moore, "Apparel Product Development", Om Book Service, 2001.
2. B.M.Lall Nigam and I.C.Jain "Cost Accounting Principles and Practice", Prentice Hall of India, 2007.
3. M.Y.Khan and P.K.Jain "Cost Accounting", Hill publishing Ltd., New Delhi, 2007.
4. Ruth E.Glock and Grace I. Kunz, "Apparel Manufacturing Sewn Product Analysis", Dorling Kindersley (India) Pvt. Ltd., 2005.
5. Chakraborty S K, "Cost Accounting and Financial Management", New age International, 2004.
6. Pandey I M, "Management Accounting", Vikas Publishing House, New Delhi, 1999.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on need for exports and export trade statistics.

CO2: Understand steps involved in setting up export business and acquire knowledge on export correspondence and negotiation

CO3: Acquire knowledge on EXIM policy and export promotion schemes

CO4: Demonstrate understanding of export finance and payment terms

CO5: Demonstrate knowledge in export documentation and procedures

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M									M		
CO2	S									M	S	
CO3	M									M		
CO4	M									M		
CO5	S									M		

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey 2. Alumni Survey

INTRODUCTION TO INTERNATIONAL TRADE:**12 Hours**

Basics of international trade and its significance. Role of WTO and regional economic groups in international trade. International trade statistics of textiles and apparel. Prospects for Indian apparel exports and SWOT analysis.

EXPORT BUSINESS:**8 Hours**

Setting up of export business - export marketing organisation, product planning for export markets, export pricing and costing, International Commercial (Inco) Terms. Export correspondence - negotiations for export business.

EXIM POLICY:**8 Hours**


High lights of Exim Policy 2008 – 2013. Various schemes for export promotion - duty drawback, duty exemption, duty remission. EOU, free trade zones, special economic zones, market access initiative, market development assistance, brand promotion, trading house, export houses, ware housing zones,

EXPORT FINANCE:**8 Hours**

Basic concepts of foreign exchange – foreign exchange risk management - Forfeiting and Factoring. Methods of International Payment Settlement - International Commercial Terms - Letter of Credit - Exchange Control Regulations for imports and exports - Export Financing - Pre-Shipment finance - Post Shipment Finance - EXIM Bank of India - ECGC - Demand Guarantees and Standby Letter of Credit -

EXPORT PROCEDURE AND DOCUMENTATION:**9 Hours**

Export Procedure, Inspection and Customs Clearance procedures. Shipping formalities. Export Documentation - types - transport documents, commercial documents, and regulatory documents.


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Marine Insurance General Information on Shipping - Types of Containers - Containerization - Air Transportation. Export Packaging - Introduction - Mechanical tests - Climatic tests - International Care labeling.

Negotiation of documents and realization of export proceeds, procedure for obtaining various export incentives.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Balagopal T A S, "Export Marketing", Himalayan Publishing House, 2005.
2. Francis Cherunilam, 'International Trade and Export Management' HPH, 2004
3. Govt. of India's, "Foreign Trade Policy", 2007.
4. D.C. Kapoor, Export Management, Vikas Publications, 2009
5. Palle Krishna Rao, "WTO – Text and Cases – Excel Series", Excel Books 2005.
6. Hearle J W S, Hines T and Suh M, "Global Marketing of Textiles", Journal of The Textile Institute (Special Issue) 1997.
7. "Globalization: Technological, Economic and Environmental Imperatives", The Textile Institute, 1995.
8. P.K.Khurana, "Export Management", Galgotia Publishsing Company, 2003.



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U14FTP701 APPAREL QUALITY EVALUATION LABORATORY

L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in basic principles of working of testing instruments

CO2: Develop skills in preparing samples for various types of experiments and to conduct experiments.

CO3: Analyze and interpret the data obtained from the testing instruments

CO4: Conclude based on the standards and present the results

Pre Requisite :

1. U14FTT505 Textile and Apparel Quality Evaluation

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		S		S								
CO3		S		S								
CO4				S						M		

Course Assessment methods:


Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course End Survey

LIST OF EXPERIMENTS:

1. Determination of Seam Strength and Seam Slippage
2. Determination of Zipper strength
3. Determination of Button Pull Strength
4. Determination of Peel bond strength of fusible interlinings
5. Determination of Wickability of fabric
6. Determination of Spirality and Course length of Knitted fabrics
7. Classification of Fabric defects and evaluation using 4 point system.
8. Determination of Wettability of fabrics.
9. Analysis of garment defects and classification into minor, major and critical defects.
10. Analysis of Seam puckers.
11. Determination of garment dimensional stability.
12. Color measurement of fabrics with computerized colour matching.

Experiments beyond the syllabus should be conducted .

Total: 60 Hours


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L	T	P	C
0	0	4	2

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Interpret and relate the published fashion forecasts to design apparels based on a concept

CO2: Create apparels designs based on requirements

CO3: Develop documents and design sheets to enable effective communication in the apparel industry

CO4: Select the suitable raw materials, garment trims & accessories and other garment details based on the garment requirements and develop garments

CO5: Estimate the Garment costing based on the sample developed

Pre Requisite :

All courses from Semester I to Semester VIII

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				S								
CO2			S		S						S	
CO3					S					S		
CO4		S									S	
CO5											M	

Course Assessment methods:

Direct	Indirect
Model Exams, Lab Exercises, End semester Exams	1. Course-end survey

GUIDELINES:

The following have to be prepared:

1. Design Research
2. Conceptualization
3. Client profile.
4. Theme board
5. Color board
6. Forecast board
7. Sourcing Board – Fabrics
8. Sourcing Board – Trims
9. Pattern (doodle) development board
10. Fashion design presentation board – 5 nos.
11. Product development - One men's wear,
12. Product development - one women's wear

Experiments beyond the syllabus should be conducted.

Total: 60 Hours



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ELECTIVE I



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on types of camera, working principles of camera and their various accessories.

CO2: Define knowledge on various camera techniques such as basic techniques, equipment techniques, and subject techniques.

CO3: Ability to identify the importance of lighting, types of lighting, film types, film speed, film format.

CO4: Acquire skills on fashion photography in different fields.

CO5: Acquire knowledge on developing and printing, image mixing and printing, computer application in photography and video photography.

Pre Requisite: Nil

.CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M									
CO2	S	S	M									
CO3	S	M	S									
CO4		S	M									
CO5	S	S	M		M							

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

INTRODUCTION:**9 Hours**

Camera types – 35mm, SLR, Digital camera. Working principle of camera. Accessories: general accessories - lenses, lens filters, film types, flashlights- lighting accessories - power accessories, system accessories. Care and maintenance of camera.

TECHNIQUES:**12 Hours**

Camera techniques: Basic techniques – fundamentals of composition, depth of field, shutter speed, focusing, using exposures. Equipment techniques – filter techniques, lens techniques, flash techniques, studio flash techniques, lighting techniques. Subject techniques – landscape, night photography, portrait, action photography and special effects. Outdoor and Indoor Photography – equipments.

LIGHTING AND FILM:**9 Hours**

Lighting – concept and importance – Types of lighting – front light, side light, back light, revealing light, controlling light, flash and studio lighting. Film types – Black and White, Colour. Film speed- Film format.

SUBJECT PHOTOGRAPHY:**6 Hours**

Fashion Photography in different media – modeling, newspaper, magazines and fashion shows. Concept/theme based photography along with its application and acceptability in marketing and commercialization/branding.



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DEVELOPING AND PRINTING:**9 Hours**

Basics of developing and printing – image mixing and printing – Latest developments in printing
– Computer application in photography. Video photography

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Nirmal Pasricha, “A Professional’s Basic Photography”, Black Rose Publications, Delhi, 2002.
2. Daniel Lezano, “The Photography Bible”, A David and Charles Book., United Kingdom, 2004.
3. Simon Joinson, “Get the most from your Digital Camera”, A David and Charles Book., United Kingdom, 2004.
4. Miller, W.R. “Basic Industrial Arts, Plastics, Graphic Arts, Photography”, McKnight Publishing company, Illinois, 1978.
5. John Hedge, “Photography Course”, John Hedge Co, 1992.
6. Steve Bavister, “35 mm Photography -The Complete Guide”, A David and Charles Book., United Kingdom, 2004.
7. Peter Cattrell, “Photography”, Octopus Publishing Group Ltd, London 2005.
8. Sue Hillyard, “The Photography Handbook - A Step by Step Guide”, New Holland Publishers, London, 2003.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Define and appreciate the significance and role of visual merchandising in a retail environment, in order to effectively present the merchandise to the consumers

CO2: Classify the various elements of Visual presentation and understand their significance in visually presenting a display`

CO3: Analyze and identify the best suitable environment for a merchandise including interior, exterior and point of displays

CO4: Acquire knowledge on various techniques used in presenting and optimizing the merchandise and retail space to customers.

CO5: Acquire knowledge on the various features available in a computer controlled visual merchandising

Pre Requisite :

U14FTT301 Concepts of Fashion and Design

U14FTP401 Fashion Design Laboratory-II

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S										
CO2		S								S		
CO3		S								S		
CO4			S									
CO5					M							

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1.course-end survey

FUNDAMENTALS OF VISUAL MERCHANDISING:**9 Hours**

Visual Merchandising - definition, objectives and scope. Types of display and display settings. Retail stores and approaches of visual merchandising -Types of retail stores, store atmospherics, Approaches in Visual Merchandising in various stores- In house staffing, Department Store Approach, Small Store Approach. Role of Visual Merchandising in changing face of retailing.

ELEMENTS OF VISUAL PRESENTATION:**5 Hours**

Overview of the various elements – Color, lighting, line and composition, graphics and signage, store exteriors and interiors, sensory stimulants like scent, sound etc. Application of color schemes and color psychology to create mood in garment display.

MANNEQUINS AND FIXTURES**6 Hours**

Mannequins and other human forms, alternatives to mannequins. Criteria for selection of fixtures, dressing fixtures, modular fixtures. Store exterior – Signs, Marquees, Outdoor Lighting, Banners, Planters, Awnings, Windows in Storefront Design, store fronts.



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STORE INTERIORS AND POINTS OF DISPLAY:**5 Hours**

Focal points, island displays, risers and platforms, the runway the catwalk, counters and display cases, museum cases, demonstration cubes, ledges, shadow boxes, enclosed displays, fascia, t-walls. Point of purchase display, industrial display, fashion shows, trade organizations and sources.

DISPLAY TECHNIQUES**5 Hours**

Attention getting devices, familiar symbols, masking and proscenia – purpose and techniques used

STORE PLANNING AND EXECUTION OF A VISUAL PRESENTATION**10 Hours**

Store layout planning- grid, race track, freeform and their direction of flow. Floor plans and reading of floor plans – Plan-o-gram- definition, purpose and planning - theme, ensemble, racks, shelves, bins, etc. Assortment planning- Assortment planning, Optimize apparel assortments Display calendar and planning a display, scheduling the promotion, budgeting and safety factors in visual merchandising.

COMPUTER AIDED VISUAL MERCHANDISING:**5 Hours**

CAD in store design, Information technology in assortment planning and inventory management.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Pegler M.M., “Visual Merchandising and Display”, IV Edition, Fair child Publications, New York, 2001.
2. Diamond. J, Diamond, E., “Contemporary Visual Merchandising”, Prentice Hall Inc. New Jersey 2003.
3. Diamond. E, Fashion Retailing – A Multi channel Approach, II Edition, Prentice Hall Inc. New Jersey 2006.
4. Rath P.M., Peterson J., Greensley.P, Gill.P, Introduction to Fashion Merchandising, Delmar Publishers Inc., New York 1994.
5. Phillips P.M., Fashion Sales Promotion, II Edition, Prentice Hall Inc, New Jersey, 1996.
6. Curtis E, Fashion Retail, John Wiley and Sons Ltd, England, 2004



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in the fundamentals of garment trims and accessories

CO2: Develop an understanding of the types and characteristics of primary trims

CO3: Gain knowledge on the types and characteristics of secondary trims

CO4: Recognize and identify the types and characteristics of packing and finishing accessories

CO5: Understand the importance of performance and testing of garment trims and accessories

Pre Requisite:

U14FTT401 Apparel Production Technology

U14FTT501 Fashion Apparel Design and Development

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S					M	M					
CO2	S	M										
CO3	S	M	M									
CO4	M					M	M					
CO5	S	M				S	S					

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

INTRODUCTION:**9 Hours**

Meaning, importance, classification, Factors affecting selection of raw materials, types of finishes for trims and accessories, importance of certification of trims and accessories in exports

PRIMARY TRIMS:**9 Hours**

Linings-fibre types and properties- factors affecting selection of linings- making up and testing of linings – lining component patterns;

Interlinings- fusible and non fusible –woven and non woven –types - chemical bonded, thermal bonded, needle bonded, spun bonded, embroidery backing, water soluble fabrics, Tricot lining, Coat lining, Mobilone tape, Felts. Wadding or batting – types and characteristics

SECONDARY TRIMS:**9 Hours**

Closures (buttons, hooks and eyes, hooks and bars, press studs, rivets, zips, ,velcro), shoulder pads, tapes; Ornamental Trims- laces, braids , elastic, fringes, tassels, appliqués, transfer prints, tie cords, labels and motifs

PACKING AND FINISHING ACCESSORIES:**9 Hours**

Types of package forms – merchandise packaging and shipping packaging, Types of packaging materials – raw materials - Poly bags, collar accessories and backing boards, Quality specification for packaging materials – fitness certification for end use and bursting strength (ASTM Standards), Packing and shipping equipment – folding equipment, container packing equipment and conveyors.

PERFORMANCE AND TESTING:**9 Hours**

Performance properties of components and trims – Standards and certification for trims and



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accessories- Buttons (BS 4162 and ASTM D5171), Snap Fasteners(ASTM D4846) Zipper (BS3084, ASTM D2061, AS 2332), Elastics (ASTM D4964 and EN 14704 Part 3), Safety tests (BS 7907, EN 71-1, 16 CFR 1501 (16 CFR.1500.51,52and53), Attached components/trim/Motifs/prints -Durability to washing – ISO 6330, Tests for nickel free and lead free trims and accessories.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Harold Carr and Barbara Latham- Technology of Clothing Manufacture– Blackwell Science Inc. USA., 2002
2. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications, 1998.
3. Gerry Cooklin – Garment Technology for Fashion Designers, Black well science Ltd. USA., 2011
4. Jarnow.J.A.and Judelle.B – Inside the fashion business, 2nd edition, 2002
5. ASTM Standards - [en.wikipedia.org/wiki/ASTM International](http://en.wikipedia.org/wiki/ASTM_International)
6. ISO Standards- www.iso.org/iso/iso_catalogue.htm



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U14CST901 OBJECT ORIENTED PROGRAMMING USING C++
(Common to EEE, EIE & FT)

L	T	P	C
3	0	0	3

Course Outcomes (COs):

After successful completion of this course, the students should be able to

CO1: Define principles of object oriented programming.

CO2: Explain about class, object concepts.

CO3: Outline the concept of operator overloading

CO4: Utilize various inheritance concepts to develop applications

CO5: Make use of virtual function concepts to develop applications

Pre-requisite Courses: Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M											
CO2	M											
CO3		S										
CO4	M	S	M									
CO5	M	M	M									

Course Assessment methods:

Direct	Indirect
Internal Tests, Assignments, Seminar, End semester Exam	Course End Survey

INTRODUCTION

10 Hours

Object Oriented Paradigm, Data Types, Operators and Expressions, Control Flow- Arrays and Strings, Modular Programming with Functions

CLASSES AND OBJECTS

9 Hours

Introduction-Class Specification-Class objects--Outside member functions as inline-Data hiding-Passing object as arguments-Returning Objects from functions-friend functions and friend class-Constant parameters and member functions-Structures and classes-Static Data and member functions-Object initialization-Constructor-Parameterized constructor-Destructor-Constructor Overloading-Constructor with default arguments-Copy constructor-Constant object and constructor-Static data members with constructor and destructor

OPERATOR OVERLOADING

10 Hours

Introduction- Overloadable operators-Unary operator overloading-operator keyword-operator return values-Nameless temporary objects-Limitations of Increment/Decrement operators-Binary operator overloading-Arithmetic operators-Concatenation of strings-comparison operators-arithmetic assignment operators-overloading of new and delete operators-Data conversion-conversion between basic data types-Conversion between objects and basic Types-Conversion between objects of different classes-Subscript operator overloading-overloading with friend



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functions-Assignment operator overloading

INHERITANCE

8 Hours

Introduction-Class revisited- Derived class declaration-Forms of inheritance- Inheritance and member accessibility-Constructors in derived classes-Destructors in derived classes-Constructor invocation and data member initialization-overloaded member function-Abstract classes-Multilevel inheritance-Multiple inheritance-Hierarchical inheritance- Multipath inheritance and virtual base class-Hybrid inheritance-object composition-Benefits of inheritance.

VIRTUAL FUNCTIONS

8 Hours

Introduction-Need for Virtual function-Pointer to derived class objects-definition of virtual functions-Array of pointers to base class objects-Pure virtual functions-Abstract classes-Virtual destructors-Rules for virtual functions.

Theory:45 Hours

Total : 45 Hours

References:

1. K.R.Venugopal, Rajkumar Buyya, "Mastering C++", TMH, 2013.
2. Bjarne Stroustrup, "The C++ programming language", Addison Wesley, Fourth Edition, 2013.
3. E.Balagurusamy, "Object Oriented Programming with C++", Fifth Edition, TMH Second Edition, 2011.
4. Robert Lafore, "Object Oriented Programming in C++", Galgotia publications pvt Ltd, Third edition, 2000

ELECTIVE II



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on basic principles in designing and types of inner wear garment and fabrics for intimate apparel.

CO2: Developing skills in preparation of intimate men's and women's garments by various measurements, pattern development and construction methods.

CO3: Relate the suitability of accessories and other construction methods of producing intimate Apparels.

CO4: Acquire knowledge on basics principles of Intimate apparels

CO5: Analyze the effect of performance evaluation factor on Intimate apparel

Pre Requisite :

U14FTT303 Basic Pattern Making and Adaptation

U14FTT501 Fashion Apparel Design and Development

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		S	M									
CO3	M		W									
CO4		S	S									
CO5			S	S	M							

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Survey

INTIMATE APPAREL:**9 Hours**

Definition-Types- Night Wear, Under Wear, Classification of Kid's, Women's and Men's Intimates. Quality requirements for selecting suitable fibers, fabrics, designs for intimate apparels. Physical and physiological health effect of Intimate apparel. Latest finishes for intimate apparels

MEN'S INTIMATE APPARELS :**9 Hours**

Introduction, Design and development- measurements - Step by step drafting procedure and construction sequence - vests, briefs, trunk, pyjama and bathrobe.

WOMEN'S INTIMATE APPAREL:**9 Hours**

Introduction, Design and development - measurements - Step by step drafting procedure and construction sequence - waist petticoat, bra, panty, camisole, night dress, negligee

INTIMATE APPAREL ACCESSORIES:**4 Hours**

Accessories - bra wire, hook and eye tape, ring and slider, buckle, plastic bone, Elastics, Threads etc. used for intimate apparel.

INTIMATE APPAREL PRODUCTION TECHNOLOGY:**6 Hours**

Principles, methods, technical aspects and controls of lamination, moulding and seamless knitting technology for production of intimate apparels.



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PERFORMANCE EVALUATION OF INTIMATE APPAREL:

9 Hours

Functional Requirements – comfort – sewability – appearance retention – durability - after care

Performance Evaluation – thermal properties – moisture permeability – liquid transport properties – low stress mechanical properties – dimensional stability & skewness stability – colour fastness – wearer trials

Requirements for engineering intimate apparels – Fibre & yarn characteristics Fabric composition, thickness structure

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. W. Yu, J. Fan, S.C. Harlock, S.P. Ng “Innovation and Technology of Women’s Intimate Apparel”, Woodhead Publishing Limited, England, 2006.
2. Ann Haggard, “ Pattern Cutting For Lingerie, Beach Wear And Leisure Wear”, Black Well Science Limited, France, 2001.
3. Lynn Nottage, “Intimate Apparel / Fabulation”, Theatre Communications Group, USA, 2006.
4. Stokes Terry, “Intimate Apparel”, Brooklyn: Release Press, USA, 1980.
5. Singer, “Sewing Lingerie”, Cy Decosse Incorporated, Mexico, 1991.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge about the varieties of home furnishing materials and finishing methods

CO2: Developing skills in the selection of different varieties of home furnishing materials in terms of sizes, shapes and patterns and construction methods.

CO3: Trace the knowledge on suitability of home furnishing linens for different end use

CO4: Trace the knowledge on suitable washing method and care & maintenance of home furnishing materials.

CO5: Assess the varieties of home furnishing products and its end uses.

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M											
CO2		S	M									
CO3	M	M										
CO4			M									
CO5			M									

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Surveys

INTRODUCTION**9 Hours**

Introduction of Textile Furnishing - definition – different type of furnishing materials – Woven and non-woven – Factors affecting selection of home furnishing – fibre, fabric and value added finishing for home furnishings - soil repellency, mosquito repellency, flame proofing, dust repellency, antimicrobial finish.

WINDOW TREATMENT**9 Hours**

Doors and Windows – types. Window Treatment – exterior, interior -hard and soft. Curtains and Draperies – types, parts, factors for selection and construction, accessories used.

LIVING ROOM FURNISHING**4 Hours**

Living Room furnishings - sofa Cover, cushion, cushion cover, bolster, bolster cover, teapoy cover and Wall coverings – types.

FLOOR COVERING**5 Hours**

Floor covering - types – Hard floor covering, resilient floor coverings, soft floor coverings - carpet, rugs, mats.

BED AND BATH LINEN**9 Hours**

Bed linens – types – bed sheets, blankets, blanket covers, comforters, comforter covers, bed spreads, mattress and mattress covers, pads, pillows and pillow covers. Care and Maintenance of bed linen.

Bath linen –types - towel, mats. Care and maintenance of bath linen.

KITCHEN LINEN**4 Hours**

Kitchen linens – types - dish cloth, towels, fridge cover, fridge handle cover, mixie cover, and



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grinder cover, napkin, apron.

TABLE LINEN

5 Hours

Table Linen – Types - table mats, table cloth, hand towel, doilies, runners. Cleaning materials – wipes and mops. Care and maintenance of kitchen and table linen.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Jay Diamond and Ellen Diamond, “Fashion Apparel, Accessories, Home Furnishings”, Pearson Prentice Hall, New Jersey, 2007.
2. Hamlym, “Bed and Table linen”, Octopus Publishing Group Ltd, Newyork 2001.
3. David Holloway, “The Essential Book of Home Improvement Techniques”, Marshals Publications, London, 2000.
4. Emma Callery, “The Home Decorator’s Colour Source Book”, Apple Press Ltd, London, 2006.
5. Heather Luke, “Design and Make Cushions”, Silverdale Books Ltd, Leicester, 2001.
6. Hamlym, “Curtains and Blinds”, Octopus Publishing Group Ltd, Newyork, 2001.
7. Susie Johns, “A Cornucopia of Cushions”, Apple Press Ltd, London, 1997.
8. James Merrell, “Living with Decorative Textiles “, Thames and Hudson ltd, London, 1995.
9. Caroline Lebea, “Fabrics The Decorative Art Of Textiles”, Thames and Hudson Ltd, London, 1994.



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U14GST003 PRINCIPLES OF MANAGEMENT

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand the concepts of management, administration and the evolution of management thoughts.

CO2: Understand and apply the planning concepts.

CO3: Analyze the different organizational structures and understand the staffing process.

CO4: Analyze the various motivational and leadership theories and understand the communication and controlling processes.

CO5: Understand the various international approaches to management

Pre Requisite :

1. Higher Secondary Education

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1									S			
CO2						S						
CO3									S	S		
CO4									S			
CO5						S						

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course –End Surveys

MANAGEMENT CONTEXT**9 Hours**

Management – Definition – Importance – Functions – Skills required for managers - Roles and functions of managers – Science and Art of Management –Management and Administration. Evolution of Classical, Behavioral and Contemporary management thoughts.

PLANNING**9 Hours**

Nature & Purpose – Steps involved in Planning – Forms of Planning – Types of plans – Plans at Individual, Department and Organization level - Managing by Objectives. Forecasting – Purpose – Steps and techniques. Decision-making – Steps in decision making.

ORGANISING**9 Hours**

Nature and Purpose of Organizing - Types of Business Organization - Formal and informal organization – Organization Chart – Structure and Process – Strategies of Departmentation– Line and Staff authority – Benefits and Limitations. Centralization Vs De-Centralization and Delegation of Authority. Staffing – Manpower Planning – Recruitment – Selection – Placement – Induction.

DIRECTING & CONTROLLING**9 Hours**

Nature & Purpose – Manager Vs. Leader - Motivation - Theories and Techniques of Motivation. Leadership – Styles and theories of Leadership. Communication – Process – Types – Barriers – Improving effectiveness in Communication. Controlling – Nature – Significance – Tools and Techniques.



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CONTEMPORARY ISSUES IN MANAGEMENT

9 Hours

Corporate Governance Social responsibilities – Ethics in business – Recent issues.

American approach to Management, Japanese approach to Management, Chinese approach to Management and Indian approach to Management.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Tripathy PC And Reddy PN, “Principles of Management”, Tata McGraw-Hill, 4th Edition, 2008.
2. Dinkar Pagare, “Principles of Management”, Sultan Chand & Sons, 2000.
3. Kanagasapapathi. P, Indian Models of Economy, Business and Management, Prentice Hall of India, New Delhi, ISBN: 978-81-203-3423-6, 2008
4. G.K.Vijayaraghavan and M.Sivakumar, “Principles of Management”, Lakshmi Publications, 5th Edition, 2009.
5. Harold Koontz & Heinz Weihrich, “Essentials of Management – An International perspective”, 8th edition. Tata McGraw-Hill, 2009.
6. Charles W.L. Hill and Steven L McShane – Principles of Management, Tata Mc Graw-Hill, 2009.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Apply linear programming model and assignment model to domain specific situations

CO2: Analyze the various methods under transportation model and apply the model for testing the closeness of their results to optimal results

CO3: Apply the concepts of PERT and CPM for decision making and optimally managing projects

CO4: Analyze the various replacement and sequencing models and apply them for arriving at optimal decisions

CO5: Analyze the inventory and queuing theories and apply them in domain specific situations.

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M										
CO2	M				W							
CO3			M	M								
CO4		M		M								
CO5	S		W									

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	Course End Survey

Course Content**LINEAR MODEL****9 Hours**

The phases of OR study – formation of an L.P model – graphical solution – simplex algorithm – artificial variables technique (Big M method, two phase method), duality in simplex.

TRANSPORTATION AND ASSIGNMENT MODELS**9 Hours**

Transportation model – Initial solution by North West corner method – least cost method – VAM. Optimality test – MODI method and stepping stone method.

Assignment model – formulation – balanced and unbalanced assignment problems.

PROJECT MANAGEMENT BY PERT & CPM**9 Hours**

Basic terminologies – Constructing a project network – Scheduling computations – PERT - CPM – Resource smoothening, Resource leveling, PERT cost.

REPLACEMENT AND SEQUENCING MODELS**9 Hours**

Replacement policies - Replacement of items that deteriorate with time (value of money not changing with time) – Replacement of items that deteriorate with time (Value of money changing with time) – Replacement of items that fail suddenly (individual and group replacement policies).

Sequencing models- n job on 2 machines – n jobs on 3 machines – n jobs on m machines, Traveling salesman problem.

INVENTORY AND QUEUING THEORY**9 Hours**

Variables in inventory problems, EOQ, deterministic inventory models, order quantity with price break, techniques in inventory management.



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Queuing system and its structure – Kendall's notation – Common queuing models - M/M/1:
FCFS/ ∞/∞ - M/M/1: FCFS/n/ ∞ - M/M/C: FCFS/ ∞/∞ - M/M/1: FCFS/n/m

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Taha H.A., "Operation Research", Pearson Education, 2008
2. Hira and Gupta "Introduction to Operations Research", S.Chand and Co.2002
3. Hira and Gupta "Problems in Operations Research", S.Chand and Co.2008
4. Wagner, "Operations Research", Prentice Hall of India, 2000
5. S.Bhaskar, "Operations Research", Anuradha Agencies, Second Edition, 2004



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ELECTIVE III



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U14FTE301 FASHION COMMUNICATION AND MARKETING

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Appreciate the significance of fashion communication, theories of clothes and their impact on society

CO2: Describe a market according to its size, structure and market environment

CO3: Demonstrate knowledge on designing appropriate marketing research, collect data and analyze data to interpret the required data from the market

CO4: Describe the types and process of fashion forecasting

CO5: Understand the significance and classification of fashion products and new product development and marketing communication strategy

Pre Requisite :

U14FTT601 Apparel Product Development

U14FTT602 Apparel Merchandising

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S								S		
CO2		S										
CO3			S	M					S			
CO4				S								
CO5		M								S		

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course-end survey

FASHION COMMUNICATION

9 Hours

Fashion and Anti fashion, Function of Fashion Clothing - Material function – protection, modesty and concealment, immodesty and attraction. Cultural functions – individuality expressions, social status, social role, economic status, political status, religious status.

FASHION AND SOCIETY

9 Hours

Fashion and modernity, fashion and post modernity, masquerade fashion and allegory, fashion and pastiche, fashion and bricolage, fashion and ambivalence.

INTRODUCTION TO FASHION MARKETING

5 Hours

Definition of Fashion- Fashion marketing – Development of Fashion market – Size, Structure – marketing environment - micro marketing, macro marketing environment.

FASHION MARKETING RESEARCH

6 Hours

Purpose of research -research design and data sources – Sampling methods – probability sampling, non probability sampling. Data sources, Primary data collection methods. Market Segmentation - Fashion marketing mix.

FASHION FORECASTING:

7 Hours

Definition of fashion forecasting, Types of forecasting – long term and short term, Process of fashion forecasting, Role of fashion forecasters, fashion forecasting packages – hard copy and soft copy packages – Trend stop, Trend union, WGSN. Forecasting Services/Agencies and its role in


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forecasting.

FASHION PRODUCT DEVELOPMENT

9 Hours

Fashion Products and its importance – Fashion Industry and new Product Development

FASHION MARKETING COMMUNICATION: Fashion advertising, Sales promotion, Public relations, celebrity endorsement and sponsorship, personal selling, visual merchandising to visual marketing.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Malcolm Barnard “Fashion as communication”, Routledge Taylor & Francis Group, 2002
2. Mike Easey, “Fashion Marketing”, Blackwell Science, 2000.
3. Maurice J. Johnson and Evelyn C. Moore, “Apparel Product Development”, Prentice Hall Inc., 2001.
4. Smith, P. R. and Taylor, J., “Marketing Communications: An Integrated Approach”, Kogan Page, London, U.K. 2005.
5. Agins, T. “The end of Fashion; How Marketing Changed the Clothing Business Forever”, Perennial, 2000.
6. Hines, T and Bruce, M. “Fashion Marketing-Contemporary Issues”, CIM, 2001
7. George Belch, Michael A Belch, “Advertising Promotion: An Integrated Marketing Communication Perspective”, Tata Mc Graw Hill, 2001.
8. John M Penrose, Robert W Rasberry, Robert J. Myers, “Advanced Business Communication”, South Western Publication Company, 2001



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U14FTE302 LOGISTICS AND SUPPLY CHAIN MANAGEMENT

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Demonstrate the importance of logistics and supply chain management and its value for competitive advantage of the firm.

CO2: Analyze and interpret the supply chain, the role of its actors and its logistics flows and function

CO 3: Demonstrate the ability to design and manage Supply Chain

CO 4: Critically assess techniques related to logistics and supply chain management required by garment industry

CO 5: Understand the concept of distribution network planning and new emerging trends SCM

Pre-Requisites: NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M									M		
CO2	M	M								M	S	
CO3	M	S								M	S	
CO4	S											
CO5	M											

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

Course Content

OVERVIEW OF SCM AND LOGISTICS

9 Hours

Definition of logistics and supply chain management, Evolution of logistics, logistics and competitive performance, physical distribution management. Principles of supply chain management – functions of supply chain management, Customer focus in supply chain management – customer service, Efficient Consumer Response (ECR).

DESIGN AND MANAGEMENT OF SUPPLY CHAIN

9 Hours

Phases of supply chain management, inbound and outbound logistics – suppliers to manufacturers, manufacturers to consumers. Logistics management - design and management, integrated supply chain, pull and push strategy. Demand management - demand forecasting and shaping. Bull wick effect- Influencing factors, control measures.

GLOBAL SUPPLY CHAIN MANAGEMENT

9 Hours

Organizing for global markets – World Class Supply Chain Management (WCSCM). Stages in global SCM. International logistics. World class Logistics Management (WCLM)

IT ENABLED SUPPLY CHAIN MANAGEMENT

9 Hours

Information technology in the integrated supply chain, importance, information requirements and applications. Intelligence information system – material resource planning, manufacturing resource planning, enterprise resource planning. IT pack- ages – SAP R/3 ERP, BAAN ERP solutions, i2 Rhythm, selection of suitable package.

Cost and Performance Measurement In Supply Chain Management: Cost drivers, activity based



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costing, logistics cost, customer profitability analysis. Benchmarking – importance, role and methodology, challenges in implementation. Performance measurement systems.

DISTRIBUTION NETWORK PLANNING

9 Hours

Transportation mix – ware housing, transportation cost, transportation decision and futuristic direction in trans- portation. Location strategy – plant location, distribution problem, ware house location, retail facility location.

EMERGING TRENDS IN SUPPLY CHAIN MANAGEMENT: Collaboration strategies, Vendor Managed Inventory (VMI), third and fourth party logistics, green supply chain, reverse logistics. .

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Douglas M.Lambert, James R.Stock and Lisa. M.Ellram, “Fundamentals of Logistics Management”, Columbia Boblin Media Corp., 1998.
2. Donald J.Bowersox and Davis J.Closs, “Logistics Management – The Integrated Supply ChainProcess”, Columbia Boblin Media Corp., 2006.
3. Sunil Chopra and Peter Meindal, “Supply Chain Management: Strategy, Planning and Operations”, Prentice Hall Inc., 2001.
4. Benjamin S. Blanchard, “Logistics Engineering and Management”, Mc Graw Hill, Inc. New York, 2002.
5. Martin Christopher, “Chap.7 of Logistics and Supply Chain Management – Strategies for reducing cost and improving service”, Second Edition. McGraw Hill. Inc., New York 1992.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Recognize the classification and design requirements of various functional clothing like medical wear, protective wear, sportswear, smart and intelligent wear

CO2: Develop technical design specifications for functional clothes

CO3: Prescribe suitable textile raw materials suitable for developing functional clothes

CO4: Apply the knowledge on textiles processes in designing functional clothing

CO5: Acquire knowledge on the evaluation methods and standards available to evaluate the various functional clothing

Pre Requisite :

U14FTT501 Fashion Apparel Design and Development

U14FTT601 Apparel Product Development

U14FTT503 Clothing Science and fit

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S			S						
CO2	S	S										
CO3	S	S	S									M
CO4	S	S	S									M
CO5				S			M					

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	Course End Survey

Course Content**INTRODUCTION:****8 Hours**

Design logic of apparels-aesthetic and functional properties, fit and comfort of apparels. Functional clothing - Classification, Design, engineering and Pattern engineering

MEDICAL WEAR:**8 Hours**

Classification of medical textiles and their functions – Textile materials used for implants and non-implants, extracorporeal devices, Healthcare and hygiene products. Therapeutic and bio sensing garments – Design and applications.

PROTECTIVE WEAR:**9 Hours**

Materials used, requirements and functions of flame resistant protective clothing-chemical protective clothing- mechanical protective clothing – electrical protective clothing and radiation protection.

SPORTS WEAR:**10 Hours**

Clothing requirements for sportswear- Identifying the needs of the end-user- design development process: Application of technical textiles suitable for sportswear; Footwear Clothing - Design, fit, materials, components and their functions.



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SMART AND INTELLIGENT TEXTILES:**10 Hours**

Smart fibres: Nano fibres, Photo adaptive fibres, Chameleon fibres, Conductive fibres – properties and applications in textiles and apparels. Phase change materials: production and applications. Shape memory polymers and properties. Stimuli sensitive intelligent textiles, Smart textiles incorporating functional devices.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Horrocks A. R. and Anand S. C, "Handbook of Technical Textiles", The Textile Institute, Woodhead Publications, Cambridge, UK, 2000
2. Adanur S., Wellington Sears "Handbook of Industrial Textiles", Technomic Publishing Co. Lanchester, USA, 1995
3. Vigo T. L., Intelligent Fibres, Journal of Textile Institute , 90, Part 3, Textile Institute, 1999
4. Anand S., "Medical Textiles", Textile Institute, UK, 1996
5. Sanjay Gupta, "Smart Textiles – Their Production and Marketing Strategies", Bhumatica Printers, New Delhi, 2000
6. Tao X., "Smart Fibres, Fabric and Clothing", Textile Institute, Woodhead Publishing Limited, Cambridge, 2001



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U14FTE304 FASHION RETAIL MANAGEMENT

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Gain knowledge on the fundamentals of retailing

CO2: Develop an understanding of customer behavior and retailing

CO3: Acquire Knowledge on management of merchandise

CO4: Understand the importance of effective location and space management for retailing

CO5: Develop an understanding of retail pricing and strategies in promotional activities

Pre Requisite :

U14FTT601 Apparel Product Development

U14FTT602 Apparel Merchandising

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	W					M	M					
CO2	W	W							M	M	M	M
CO3	W	M	M						M	M	M	M
CO4	W	M	S			M	M		M	M	M	M
CO5	W	M	S			M	M		M	M	M	M

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

RETAILING AND RETAILING ORGANIZATION:**9 Hours**

Definition, characteristics and functions of retailing, retailers, retailing channels, retail strategy.

Structure of retail organization, retail units, merchandise mix, customer interaction, organized retailing, retail formats, geographical markets, retailing in rural India, vertical marketing system, challenges in retail business.

RETAIL CUSTOMER BEHAVIOUR:**4 Hours**

Consumer behaviour, factors affecting consumer decision making, consumer decision process, influence of situational variables on shopping behaviour, customer profile and analysis.

RETAIL MARKET SEGMENTATION AND TARGET MARKETING:**5 Hours**

Segmentation- definition and benefits: Segmenting, targeting and positioning. Criteria for segmentation, types of markets, dimensions for segmentation, types of segmentation. Market targeting, customer profile, survey of buyers intentions.

MERCHANDISE MANAGEMENT:**7 Hours**

Product management, brand management and retailing, merchandise management, model stock plan, constraining factors, types of suppliers and selection criteria, category management, merchandise management planning in retail segments.

RETAIL LOCATION AND SPACE MANAGEMENT:**9 Hours**

Location decision - importance, levels and determining factors. Types of location, types of consumer goods and location decision. Site selection analysis.

Atmospherics, stores pace management, walls as retail selling tools, colour planning, physical materials in store designing, atmospherics in the context of internet retailing.



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RETAIL PRICING & PROMOTION STRATEGY:**11 Hours**

Influences on retail pricing strategy, development in retail prices, retail pricing objectives, retail pricing approaches and strategies, consumer responsiveness to prices, role of price elasticity and sensitivity.

Promotion mix selection, advertising, media selection, sales promotion, personal selling and publicity.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Mike Easey , “Fashion Marketing “, Blackwell Scientific Publications, 2002
2. Gibson G. Vedamani, “Retail Management Functional Principles and Practices”, Jaico Publishing House, Second Edition, 2002
3. Nair Suja. R, "Retail Management", Himalaya Publishing House, 2008.
4. Bajaj Chetan Srivatsa Tuli, "Retail Management", Oxford University Press, 2008.
5. Fleming Peter, "A Guide to Retail Management": Advice on retail operation, customer service and sales team, Jaico Publishing House , Mumbai, 2007.
6. Gopal, "Retail Management: An Introduction", ICFAI University press, 2006.



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U14GST002 TOTAL QUALITY MANAGEMENT**Course Outcomes**

L	T	P	C
3	0	0	3

After successful completion of this course, the students should be able to

CO1: Understand quality concepts and philosophies of TQM

CO2: Apply TQM principles and concepts of continuous improvement

CO3: Apply and analyze the quality tools, management tools and statistical fundamentals to improve quality

CO4: Understand the TQM tools as a means to improve quality

CO5: Remember and understand the quality systems and procedures adopted

Pre Requisite :

U14GST003 Principles of Management

U14MA7305 Probability and Applied Statistics

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

INTRODUCTION:**9 Hours**

Definition of Quality, Dimensions of Quality, Quality costs, Top Management Commitment, Quality Council, Quality Statements, Barriers to TQM Implementation, Contributions of Deming, Juran and Crosby, Team Balancing

TQM PRINCIPLES:**9 Hours**


Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Continuous Process Improvement, 5S, Kaizen, Just-In-Time and TPS

STATISTICAL PROCESS CONTROL:**9 Hours**

The seven tools of quality, New seven Management tools, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Concept of six sigma.

TQM TOOLS:**9 Hours**

Quality Policy Deployment (QPD), Quality Function Deployment (QFD), Benchmarking, Taguchi Quality Loss Function, Total Productive Maintenance (TPM), FMEA


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QUALITY SYSTEMS:**9 Hours**

Need for ISO 9000 and Other Quality Systems, ISO 9001:2008 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, ISO 14001:2004

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Dale H.Besterfield, “Total Quality Management”, Pearson Education, 2011.
2. James R.Evans & William M.Lindsay, “The Management and Control of Quality”, South-Western (Thomson Learning), 2008.
3. Feigenbaum.A.V. “Total Quality Management”, McGraw Hill,1991.
4. Oakland.J.S. “Total Quality Management”, Butterworth – Heinemann Ltd., Oxford,1989.
5. Narayana V. and Sreenivasan, N.S. “Quality Management – Concepts and Tasks”, New Age International, 2007.
6. Zeiri, “Total Quality Management for Engineers”, Wood Head Publishers, 1991.



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ELECTIVE IV



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U14FTE401 APPLICATION OF COMPUTERS IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquiring knowledge on basics of computer, CAD / CAM applications in apparel design and in manufacturing.

CO2: Identify and apply the CAD / CAM process in apparel designing and manufacturing.

CO3: Analyse the designs and developing new designs and requirements.

CO4: Acquire knowledge on different types of management systems in computer aided applications.

CO5: Applying the new concepts of CAD systems.

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2		S										
CO3		S										
CO4	S											
CO5		S										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

COMPUTER BASICS:

7 Hours

Introduction to Computer fundamentals –computer specifications, Input, output, and storage technologies. Computer Software – Application software, system software, commercial software, graphics software – vector and raster graphics. Computer network: LAN/WAN, Web and email.

COMPUTER AIDED TEXTILE DESIGN SYSTEMS- TEXTILE CAD:

11 Hours

Warp and Weft design, Simulation of colour and weave effect - Plain and stripe effect, automatic peg plan and draft generation; Weave construction library – Knitting Design CAD – features and process in knit designing. Print design CAD: Touch up and production of mask films; automatic repeats and half drop generation, colour separation. Embroidery Design CAD: features and process of punching software.

COMPUTER AIDED FASHION AND PATTERN DESIGN SYSTEMS:

9 Hours

Illustration, garment designing and texture mapping, story board and cataloguing, Virtual Garmenting. 3D Body Measurement System –Digitizer -Pattern Drafting system- Grading – grade rule table - Marker planning.

COMPUTER AIDED GARMENT PRODUCTION SYSTEMS:

11 Hours

Computer application in fabric defect checking, computerized fabric laying and cutting. Principle of Radio frequency tagging- Application in material handling, cutting and ware house storage. Application of Automation and pneumatics in production and finishing machines - sewing, fusing, pressing, work aids, stackers, folding and finishing. UPS system- Robotics.



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COMPUTER AIDED MANAGEMENT SYSTEMS:**7 Hours**

E-prototyping in garments – Electronic catalogues – E-commerce and M-commerce in apparel industry – Enterprise Resource Planning (ERP), Electronic Data Interchange (EDI), Management Information System (MIS).

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Rence weiss chase, CAD for fashion Design”, Prentice Hall Inc., 1997.
2. Winfred Aidrich,”CAD in Clothing and Textiles”, Blackwell Science Ltd., 1994.
3. Patric Taylor,”Computer in the Fashion Technology”, Om Book Service,1997.
4. Sigmon, D.M., Grady P.L. and Winchester S.C, “Computer Integrated Manufacturing and total quality management”, Textile Progress, Vol. 27, No.4, 1998, ISBN: 1870372166.



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand the classification of leather materials and process of preparing leather for manufacture leather apparels

CO2: Understand the process of preparing leather for manufacture leather apparels

CO3: Gain knowledge on designing leather apparels

CO4: Gain knowledge on properties and characteristics of leather garments

CO5: Gain knowledge on types of machineries and equipments used in manufacture of leather apparel

Pre-requisites: Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M											
CO2		M										
CO3		M										
CO4	M											
CO5		M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

LEATHER TANNAGES:**9 Hours**

Principles and practices, preservation techniques: Soaking, Liming, deliming, bating, and pickling. Different methods of pertaining processes: light, heavy and Industrial leathers. Types of Tannages: Vegetable, synthetic. Tannage mechanism. Post tanning operations: Neutralisation, bleaching processes and dyeing. Types of leathers: E.I., tanning of kips, buffcalf, calf and goat and sheep skins, sole leather, chrome sole leather, picking band leathers and pickers.

LEATHER PROCESSING:**12 Hours**

Processes and principles involved in manufacture of following types of leather - Wetblue leathers - Full Chrome Upper leathers - Upholstery leathers lining leathers - Harness, Belting and Saddlery leathers. - Football, hockey ball, cricket ball and other sports goods leathers - Chamois leather Fashion garment leathers - Utility glove leathers. Principle methods and mechanism of drying of leathers.

CLASSIFICATION AND TYPES OF LEATHER GARMENTS: Classification of leather garments, based on material design, uses and fashion, anatomy of human body. Types of figures and age group. Principles of Tailoring. Emphasis of sizes, measurements and fitting. Different types of leather garments, Grain garments, Suedes, Fur leather from sheep, goat, cow, calf, chrome, semi - chrome. Combination tanned leather.

PROPERTIES AND CHARACTERISTICS OF LEATHER GARMENTS: general properties of leather such as feel, texture, resistance, rub resistance, uniformity of shades, lining and padding



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materials, fasteners, grinders, thread and decorated fitting.

TOOLS, EQUIPMENT, AND MACHINERY:

7 Hours

Machines used in garment manufacturing such as Industrial sewing machine – Single & Double, Cloth cutting machine, Button hole & button stitching machine and Ironing process. Tools used for garment manufacturing such as gimping scissors, wooden & iron hammer, stone slabs, measuring tapes, measuring instruments (L square), Shaper, Crayons, Special furniture required for garment unit and dummy for checking fitting.

APPAREL DESIGNING:

9 Hours

Preparation of sectional patterns, Arrangements of patterns to minimize the wastage of leathers. Recovery of wastage and its utilization. Designing and fabrication of garments, gloves, cap coat, pant etc. Shoe: Selection of leather, upper closing lasting and conditioning. Designing and fabrication of shoes.

SEQUENCE OF OPERATION:

8 Hours

Principle of cutting components, colour matching, texture feel, type of stitching, and attachment, Sequence of operation for assembly of components for garment manufacturing.

QUALITY CONTROL IN LEATHER GARMENTS: In process checking and final checking of measurements, get up and overall quality of free hand sketching and drafting and preparation of pattern.

Theory : 45 Hours

Total: 45 Hours

REFERENCES:

1. Grace I, Kunz and Ruth E. Glock, “Apparel Manufacturing: Sewn Product Analysis”, Prentice Hall, Fourth Edition, 2004.
2. Dutta.S S, “An Introduction to the Principles of Leather Manufacture”, Fourth Edition, Indian Leather Technologists Association, Calcutta, 2002.
3. Sandy Scrivano,”Sewing with Leather & Suede”, Lark Books, 2002.
4. Thomas C,Thorstensen,”Practical Leather Technology”, Krieger Publishing Company, 2001.
5. Mary Maguire, “Leather Work”, Lawrence Publication House, 2000.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on drivers and factors influencing global marketing.

CO2: Understand the process of global management.

CO3: Acquire knowledge on sourcing strategies.

CO4: Identify the elements of sourcing design.

CO5: Analyze trends in growth of global markets

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2	S											
CO3	S											
CO4		S										
CO5		S										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

GLOBAL MARKETING:**9 Hours**

Introduction to Global Marketing – Drivers towards Globalization - Factors influencing global marketing – economic, social and cultural. Limitations to Global Marketing. Global Competitive analysis - competitive environment, country specific advantages, firm specific advantages.

GLOBAL MANAGEMENT:**9 Hours**

Global customers - Global segmentation and positioning- market segments, global product positioning, positioning a new brand, positioning a global brand. Global Product and Services - Global product lines, services, service quality, globalization of services. Distribution strategies, advertising, promotion. Organizing for Global Marketing - Organizational structure, management systems, people and organizational culture.

SOURCING STRATEGIES:**9 Hours**

Principles of sourcing strategy - out sourcing. Sourcing goals and objectives. Source selection - contracts and incentives, supplier strategies. Sourcing data and reports.

SOURCING DESIGN:**9 Hours**

Sourcing design elements. Risks and rewards of multiple sourcing. Capacity constraints and pricing in sourcing markets. LIC selection and incentives for innovation - Yard stick contracts. Case studies in sourcing.



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FUTURE OF GLOBAL MARKETING:**9 Hours**

Growth of markets – developed and under developed countries. Issue of Trade cycles. Rise of under developed and developing countries. Global marketing case studies.

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Warren.J.Keegan, “Global Marketing Management”, 7th Edition, Prentice Hall of India, New Delhi, 2008.
2. Johany. K.Johansson, “Global Marketing”, Second Edition, Irwin McGraw Hill, 1995.
3. Subash C, Jain, “International Marketing”, Sixth Asian books (P) Ltd, South Western Thomson learning, 1993.
4. Cateora, “Organisations Structures”, Tenth Edition, McGraw Hill, 1997.
5. Sudhi Sheshadri “Sourcing Strategy”, Principles, Policy and Design , Springer, 2005.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on the principles of engineering applied in the manufacture of technical textiles and apply the same in apparel engineering processes.

CO2: To analyze and identify required parameters vital to design and manufacture apparel products with technical application suiting the needs of the customer.

CO3: To be able to use and create textiles for new technical applications

CO4: Acquire knowledge on different special fibres and composites used for technical applications

CO5: Acquire knowledge on various technical apparels used in different domains

Pre Requisite :

U14FTT101 Fibre science and Yarn Technology

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S										
CO2		S	M	S								
CO3	M	S	S		M	S						
CO4	S	M										
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

8 Hours

TECHNICAL TEXTILES: Definition and scope of technical textiles, Classification.

TECHNICAL FIBRES: High strength and modulus organic fibres – High chemical and thermal resistance organic fibres. High performance inorganic fibres – Ultra fine and Novelty fibres.

9 Hours

AGRO TEXTILES: Textiles for crop covers, bird netting, soil mats and silos. Shade fabrics and textiles for green houses.

GEO TEXTILES: Types and application of geo synthetics. Functions and application areas of geo textiles. Mechanics of reinforcement, filtration and drainage by geo textiles.

9 Hours

AUTOMATIVE TEXTILES: Application of textiles in automobiles. Requirement and design for pneumatic tyres, airbags and belts. Textiles in passenger cars, other road vehicles, Rail applications, Air crafts , Marine application. Application of composites in automotives.

10 Hours

PROTECTIVE TEXTILES: Waterproof fabrics – breathable fabrics – Fire protection – Heat and cold protection – Ballistic protective clothing – Camouflage textiles – NBC protection

9 Hours

TEXTILES IN FILTRATION: Dust collection, Solid-liquid separation, liquid – liquid filtration, liquid-gas separation, Mechanism of filtration, Fabric construction, Finishing treatments,



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PACKAGE TEXTILES: Textiles in food packaging. Fabrics for bags and luggage. Flexible Intermediate Bulk Packing.

Theory : 45 Hours

Total: 45 Hours

REFERENCES:

1. Sabit Adanur and Wellington Sears, “Handbook of Industrial Textiles”, Technomic Publishing company Inc., USA, 1995.
 2. A. R. Horrocks and S. C. Anand, “Handbook of Technical Textiles”, Woodhead Publishing Limited and the Textile Institute, 2000.
 3. S.K. Mukhopadhyay & J.F. Partridge, “Automotive Textiles”, Textile Progress, Vol.29, No.1/2, the Textile Inst. Publication, 1999.
 4. Dr. V K Kothari, “Progress in Textiles : Science and Technology”, Vol 3, Technical Textiles Technology, Development & Applications , IAFL Publications, New Delhi, 2008.
 5. Fung & Warner, “Textiles in Automobile Engineering” Woodhead Publishing, ISBN: 978-1-85573-493-7, 2000.
 6. K.L. Floyd, “Industrial Application of Textiles”, Textile Progress Vol.6 No.2 the Textile Institute Publication, 2009.
- Medical Textile – International Conference, Bolton UK, 2007.



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ELECTIVE V



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge in different fibres used in nonwovens.

CO2: Acquire knowledge in web formation techniques.

CO3: Explain different web bonding techniques of nonwovens.

CO4: Acquire knowledge in finishing of nonwovens.

CO5: Develop skills in testing of nonwovens.

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

INTRODUCTION TO NONWOVEN:**9 Hours**

Nonwovens: Introduction, Definition, Fibres used in nonwovens, Comparison of woven, knitted and nonwoven structures. Nonwoven properties including environmental considerations. Nonwoven applications in technical garments.

WEB FORMATION TECHNIQUES:**9 Hours**

Dry laid web Formation: Raw material - Fibre Opening – Carding – Cross lapping - perpendicular-laid web formation - Airlaid web formation: Air laying technology - bonding systems & finishing - properties & applications. Wet-laid web formation: Raw materials – fibre preparation – web forming technology – bonding systems – finishing- properties & applications. Polymer laid web formation: Spun bonding and Melt blown process: raw material - production technology – structure and properties – application.

WEB BONDING TECHNIQUES:**9 Hours**

Mechanical Bonding: Stitch bonding, Needle Punching: principle- various factors influencing needle punching process – properties and applications. Thermal Bonding: principle – raw materials – structure and properties – applications. Chemical Bonding: Chemical binders – mechanism of chemical bonding – methods of binder application – drying – Limitations and applications.

FINISHING OF NONWOVENS:**9 Hours**

Wet Finishing: Washing, coloration – dyes, dyeing machines; printing. Application of Chemical Finishes- antistatic agents, antimicrobial finishes, softening, flameproof, waterproof, stiffeners, UV stabilizers



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Methods for applying chemical finishes- padding, coating, lamination. Mechanical Finishing- splitting and winding, perforating, drying, compressive finishes, calendaring; Surface finishing- singeing, shearing, flocking, raising, polishing, softening. Development in nonwoven finishing.

TESTING OF NONWOVEN:

9 Hours

Testing of Nonwoven fabrics: weight, thickness, fibre orientation, fabric porosity, pore size & pore size distribution, dry sieving, wet sieving, hydrodynamic sieving, bubble point test method, measuring tensile properties, measuring gas and liquid permeability, measuring water vapour transmission, measuring wetting and liquid absorption, measuring thermal conductivity and insulation

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Hand Book of Nonwovens – Edited by S.J.Russell, Wood head publications Ltd., ISBN- 13: 978-1-85573-603-0, 2007.
2. Nonwoven Fabrics: Raw Materials, Manufacture, Applications, Characteristics, Testing Processes, Edited by Wilhelm Albrecht , Hilmar Fuchs and Walter Kittelmann, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim,, ISBN: 3-527-30406-1, 2003.
3. Hand Book of Technical Textiles – Edited by S.C.Anand & A.R.Horrocks, Wood head publications Ltd., ISBN 1 85573 385 4, 2000.
4. Applications of Nonwovens in Technical textiles, Edited by R.A.Chapman, CRC press, 2010.



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Board of Studies

U14FTE502 THEORY OF TEXTILE STRUCTURES

L	T	P	C
3	0	0	3

Course Outcomes:

CO1: Analyze the geometry and construction of various fabrics and relate the geometry with fabric properties

CO2: Formulate equations for prediction of tensile properties of various fabrics and explain the reasons for such behavior.

CO3: Explain the theories of mechanical properties of fibres

CO4: Apply the knowledge of Dimensional properties and Relaxation – shrinkage in designing knitted garments.

CO5: Explain the theories of fibre structure and properties of fibres.

Pre-requisite courses:

U14MA7201 Engineering Mathematics – II

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S										
CO2	S	S										
CO3	S	S										
CO4	S	S										
CO5	S	S										

Course Assessment Methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course End Survey

THE STRUCTURE PROPERTIES OF FIBRES**9 Hours**

Structure of fibres, morphology and order in fibre structure. Theories of fine structures of fibres. Frictional properties – Theory of friction and lubrication and its application to fibres. Measurement of friction. Thermal and optical behaviour of fibres. Swelling and theories of moisture sorption, .Di-electric properties. Effects of frequency and temperature on dielectric constant and static electricity.

THE MECHANICAL PROPERTIES OF FIBRES.**9 Hours**

Theories of elasticity. Thermodynamic analysis of deformation. Rubber elasticity of long chain molecules and molecular network. Application to fibres. Theories of viscose-elasticity. Stress relaxation, creep, stress-strain relations, visco-elasticity of natural fibres.

YARN AND FABRIC MECHANICS**9 Hours**

Basic Yarn Geometry - Packing of fibres in yarn; Fibre arrangement in twisted yarn; Fabric Mechanics: Fabric Specifications and cover factor. Plain cloth geometry - crimp ratio and thread spacing - setting theory and maximum set. Pierce's flexible and elastic thread model - Oloffson's general model. Crimp interchange in woven fabrics - crimp balance -geometrical structure of twill and mat weaves.



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TENSILE PROPERTIES OF WOVEN FABRICS

9 Hours

Tensile properties of woven fabrics : stress-strain curve .Modeling of tensile behavior, anisotropy of woven fabric. geometrical changes during the extension of cloth - load extension modulus, Application of force, energy and finite element methods in fabric tensile behavior analysis.

KNITTING DYNAMICS

9 Hours

Knitting Dynamics: Yarn tension and knitting forces - effect of cam shape, increase in number of feeders and increase in linear speed. Single jersey knitted fabric Geometry and Properties: Tightness factor - Dimensional properties – Spirality - Relaxation – shrinkage

REFERENCES:

1. Manufactured Fibre Technology VB Gupta & VK Kothari
2. Physical properties of Textile Fibres WE Morton & JWS Hearle
3. Seyam A M, “Structural Design of Woven fabrics”, Textile progress Vol.31, No: 3. Wood Head Publishing Ltd, 2002
4. Progress in Textiles: Science & Technology Vol. 1, Testing and Quality Management, V.K. Kothari, IAFL Publications, New Delhi, ISBN: 81- 901033-0-X, 1999.
5. J Hu, “Structure and mechanics of Woven fabrics”, Hong Kong Polytechnic University, Wood Head Publishing Ltd, 2004.
6. Hearle J W S, Grosberg P and Backer S, “Structural mechanics of fibres, yarn and fabrics”, Wiley Interscience Publishing limited, 1969.



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U14FTE503 APPLICATION OF ERP AND MIS IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on basics of ERP and MIS.

CO2: Acquire knowledge on the application and modules of ERP in apparel Industry.

CO3: Acquire Application strategy of Information Systems in apparel industry.

CO4: Develop knowledge on internet and electronic commerce and their day to day importance.

CO5: Describing and developing knowledge on transforming Information systems to the business operations

Pre Requisite : NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2	S											
CO3	S									M		
CO4		S								M		
CO5		S								M		

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

INTRODUCTION:

9 Hours

An overview and features of ERP, MIS integration, ERP drivers, Trends in ERP, ERP in India. ERP system perspective – Management Information System, Operations Support System, Transaction Processing System, Network Structure of ERP system, ERP work flow, Process modeling for ERP systems, Communication in ERP systems, OLTP, (On Line Transaction Processing), OLAP (On Line Analytical Processing), Enterprise Integration application tools for ERP.

RESOURCE MANAGEMENT PERSPECTIVE:

9 Hours

Business modules in ERP packages, Finance, Production, Human Resource, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution, Resource Management, Business Process Reengineering, Relationship between ERP and BPR, ERP Implementation Life cycle, Implementation methodology, ERP Project Management and Monitoring. ERP and E-Commerce, ERP Culture, ERP and CRM, ERP and SCM, ERP selection issues, ERP in Public Sector Enterprises, Pre- and Post-implementation issues, ERP Vendors, Key ERP consultants in India, Future directions in ERP.

BASICS OF INFORMATION SYSTEM:

9 Hours

Introduction to Information system in business, Need for Information Technology, System concept, Components of an information system, Information system resources, Information system activities, recognizing information system. Expanding role of information systems, Operating support system, Management support systems.

INTERNET AND ELECTRONIC COMMERCE:

9 Hours

Introduction, Business use of internet, Interactive marketing, Business value of the internet,



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Customer value and the internet. Fundamentals of Electronic Commerce (EC), EC applications, Business-to-Consumer commerce, Business to Business commerce, Electronic payments and security.

INFORMATION SYSTEMS FOR BUSINESS OPERATION:

9 Hours

Applications of intranets, intranet technology resources, the business value of intranets, the role of Extranets, enterprise collaboration systems. Information systems for marketing, manufacturing, human resources, accounting, financial, transaction processing, managerial and decision support, Information systems for strategic advantages, Strategic application and issues in IT, ethical and societal challenges of information technology.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. V.K.Garg, Venkat and N.K.Krishna, “ERP Concepts and Practices”, 1st edition, PHI Publications, 1997.
2. James A. O’Brien, “Introduction to Information Systems”, Tata McGraw Hill, New Delhi, 2005.
3. Alexis Leon, “ERP Demystified”, 1st edition, Tata McGraw Hill, New Delhi, 2000.
4. S.Sadagopan, “ERP: A Managerial Perspective”, 1st edition, Tata McGraw Hill, New Delhi, 1999.
5. Langenalter, A.Gary, “Enterprise Resources Planning and Beyond”, 1st edition, St. Lucie Press, USA, 2000.
6. Diwan, Parag and Sharma, Sunil, “Enterprise Resource Planning: A Manager’s Guide”, 1st edition, 1999.
7. E.Turban, E.McLean and J.Wetherbe, “Information Technology for Management: Making Connections for Strategic Advantage”, John Wiley and Sons, New Jersey, 2001.
8. W.S.Jawadekar, “Management Information Systems”, Tata McGraw Hill, New Delhi, 2004.



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L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on branding strategy and positioning

CO2: Understand the brand building and extension strategies

CO3: Demonstrate understanding of brand management and global branding

CO4: Acquire knowledge on Advertising types and advertisement business

CO5: Demonstrate ability to create advertisement message, select media, and work out budget.

Pre-requisites: NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M				M							
CO2	M				M					M		
CO3	W				M					M		
CO4	S	M								M		
CO5	M	M								M		

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

BASICS OF BRANDING:**9 Hours**

Concept, image, identity, loyalty. Brand name – types. Branding strategy - Brand positioning - competitive positioning, product positioning. Brand equity. Intellectual property rights – Trademark and brand registration.

BRAND BUILDING:**9 Hours**

Consumer branding, technology branding, corporate branding, retail branding. Brand extension: Concept, evaluation of opportunities, factors influencing extension, extension guidelines.

GLOBAL BRANDING:**9 Hours**

Rationale, advantages / disadvantages. International branding strategy - planning system, leadership, cross-country relationship.

Brand Management Systems: Role of Product managers / brand managers. Trends in brand management - brand cult. Brand alliances – co branding, licensing.

ADVERTISING:**9 Hours**

Definition, advertising objectives, benefits, economic aspects and ethics in advertising. Advertising and marketing mix.

Advertising Appeal: Message – reach, frequency, impact and effectiveness

Media Overview: Types of media, media selection, media plan, media cost and availability. Matching media and market. Media strategy - media mix, media scheduling. Comparative evaluation.

ADVERTISING BUSINESS:**9 Hours**

Organization, advertising manager, advertising agency, advertising plan, basic principles, agency compensation. Public relations. Advertising Budget: Allocation of budget for various components of advertising. Methods of determining budget for advertisement. Administering the advertisement budget

Theory : 45 Hours**Total: 45 Hours****REFERENCES**

1. Harsh.V.Verma, "Brand Management- Text and Cases", Excel Books, New Delhi, 2005
2. Moorthi Y L R, "Brand Management", Vikas Publications House Pvt. Ltd., Mumbai, 2004.
3. Kevin Lane Keller, "Strategic Brand Management", Prentice Hall, 2nd Edition, 2006
4. Sengupta S, "Brand Positioning", Tata McGraw Hill, New Delhi, 2006.
5. K.S.Chandrasekhar, "Product Management - Text and Cases", Himalaya Publishing House, 1st Edition, 2002.
6. S.A.Chunnawala, "Product Management", Himalaya Publishing Home, First Edition, 1998.



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ELECTIVE VI



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U14FTE601 ENTREPRENEURSHIP DEVELOPMENT

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Recognize the factors affecting Entrepreneurship growth and their problems.

CO2: Outline the importance of Entrepreneurial Development programmes.

CO3: Describe the projects identification, selection and formulation procedure

CO4: Indicate the role of government in entrepreneurial development

CO5: Underline the basis of intellectual property rights in India.

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

ENTREPRENEUR:**9 Hours**

Entrepreneurship and economic development – its importance – Entrepreneur Qualities, nature, types, traits of entrepreneur. Similarities and differences between entrepreneur and manager – factors affecting entrepreneurship growth-Problems of entrepreneurs

ENTREPRENEURIAL PROMOTION:**9 Hours**

Motivation: Theories and factors – Entrepreneurial development programmes – need, objectives, phases and evaluation - Training and developing - occupational mobility - factors in mobility - Role of consultancy organizations in promoting entrepreneurs.

PROJECT MANAGEMENT:**9 Hours**

Project identification and selection – project formulation – Report preparation – evaluation: marketing - technical and financial.

9 Hours

Role of government in entrepreneurial development – District Industry Centre and its role – Government incentives – financial and non-financial – Sectoral reservation for SSI and tiny sector.

PROPERTY**9 Hours**

Definition and ownership-kinds of property-types of intellectual property-patent-trade marks – industrial design-need for protection for IP-WIPO and its activities-TRIPS Agreement-evolution of IPR in India.

Theory : 45 Hours**Total: 45 Hours**


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REFERENCES

1. Entrepreneurial Development by S S Khanka, S. Chand and Co: 2008 ISBN: 81-219-1801-4,
2. Intellectual Property Rights Text and Case, by Dr. R. Radhakrishnan and Dr.S. Balasubramanian, Excel Books, 2008, ISBN: 978-81-7446-609-9
3. Vasanth Desai “Dynamics of Entrepreneurial Development and Management” Himalaya Publishing House.2011
4. N.P.Srinivasan and G.P. Gupta “Entrepreneurial Development” Sultanchand and Sons.,2008
5. P.Saravanavelu “Entrepreneurship Development” Eskapee publications,2008.
6. S.S.Khanka “Entrepreneurial Development” S.Chand and Company Ltd.,2008
7. Satish Taneja, Entrepreneur Development ; New Venture Creation,2010
8. www.iprventure.com,



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U14FTE602 ENERGY MANAGEMENT IN APPAREL INDUSTRY

L	T	P	C
3	0	0	3

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Recognize the need for Energy Management and Conservation

CO2: Knowledge on Energy Audit and Energy Control

CO3: Outline the Energy Conservation areas and methods in Factory

CO4: Knowledge on the Developments in Energy Efficient Technologies

CO5: Application Of Non Conventional Energy Sources

Pre Requisite : Nil.

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

ENERGY MANAGEMENT AND CONSERVATION:

7 Hours

Concept of energymangement - need for energy conservation - Demand - Supply Management.

Global Energy Concerns: Global energy conservation scenario – energy conservation measures in India. United Nations Framework on sustainable development, Kyoto Protocol.

ENERGY MANAGEMENT AND AUDIT:

11 Hours

Definition of Energy Audit, need and types of energy audit, energy audit instruments. Understanding energy costs, bench marking energy performance, matching energy use to requirement, basic principles for optimizing the input energy requirements. Energy Management Department - Top management support, managerial function, roles and responsibilities of energy manager, accountability. Motivation of employees: Information system – overcoming barriers.

Energy Monitoring and Control: Cumulative Sum of Differences (CUSUM) of Energy production and consumption, Energy production and consumption monitoring and control, elements for monitoring, data analysis and control.

ENERGY CONSUMPTION ANALYSIS:

12 Hours

Methods for energy consumption analysis. Analysis for apparel manufacturing machineries and finishing equipments. Cost of energy Vs sales value of apparel product.

Energy Conservation in Factory: Energy saving opportunities with energy efficient motors. Factors affecting the electrical energy performance and energy saving opportunities. Factors affecting Refrigeration and Air conditioning system performance and saving opportunities.



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Lighting System - Light source, choice of lighting, luminance requirements, and energy conservation avenues. **Diesel Generating system** - Factors affecting selection, diesel energy conservation avenues. **Waste Heat Recovery** - Classification of waste heat. Source of waste heat in apparel industry. Commercially viable waste heat recovery devices, saving potential.

DEVELOPMENTS IN ENERGY EFFICIENT TECHNOLOGIES:

7 Hours

Maximum demand controllers, automatic power factor controllers, energy efficient motors, soft starters with energy saver, variable speed drives, energy efficient transformers, electronic ballast, and energy efficient lighting controls.

APPLICATION OF NON CONVENTIONAL ENERGY SOURCES:

8 Hours

Scope of application of non-conventional energy - Solar energy: different type of collectors — photovoltaic cells. Wind energy, Bio energy, environmental impact on energy and co-generation by using different techniques.

Theory : 45 Hours

Total: 45 Hours

REFERENCES

1. Kalyanaraman. A.R, “Energy Conservation in Textile Industries”, SITRA 1995 (Revised)
2. Palaniappan.C et al, “Renewable Energy Applications to Industries”, Narose Publishing House, New Delhi, 1998.
3. "Energy Management" PCRA Monograph.
4. Pradeep Chaturvedi and Shalini Joshi, “Strategy for Energy Conservation in India”, Concept Publishing Co., New Delhi, 1995.
5. Proceedings of International Seminar cum Exhibition ASIA Energy Vision 2020 — Sustainable Energy Supply, November 15-17, 1996
6. Proceedings of 12 Shirley International Seminar, “Profitable Energy Savings in the Textile Industry”, September 16-18, 1980
7. Proceedings of the Seminar, “Strategies for Sustainability of Energy Efficient and environmental Friendly Technologies in Small and Medium Scale Sector”, PSG College of Technology, November 24, 2000.
8. Proceedings of All India Workshop, “Latest Trends in Energy Audit Systems”, Institution of Engineers (I), December 12-13, 1993.



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Evaluate the economic theories, cost concepts and pricing policies

CO2: Understand the market structures and integration concepts

CO3: Understand the measures of national income, the functions of banks and concepts of globalization

CO4: Apply the concepts of financial management for project appraisal

CO5: Understand accounting systems and analyze financial statements using ratio analysis

Pre Requisite : Nil

CO/PO Mapping (S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

ECONOMICS, COST AND PRICING CONCEPTS

9 Hours

Economic theories – Demand analysis – Determinants of demand – Demand forecasting – Supply – Actual cost and opportunity cost – Incremental cost and sunk cost – Fixed and variable cost – Marginal costing – Total cost – Elements of cost – Cost curves – Breakeven point and breakeven chart – Limitations of break even chart – Interpretation of break even chart – Contribution – P/V-ratio, profit-volume ratio or relationship – Price fixation – Pricing policies – Pricing methods

CONCEPTS ON FIRMS AND MANUFACTURING PRACTICES

9 Hours

Firm – Industry – Market – Market structure – Diversification – Vertical integration – Merger – Horizontal integration

NATIONAL INCOME, MONEY AND BANKING, ECONOMIC ENVIRONMENT

9 Hours

National income concepts – GNP – NNP – Methods of measuring national income – Inflation – Deflation – Kinds of money – Value of money – Functions of bank – Types of bank – Economic liberalization – Privatization – Globalization

CONCEPTS OF FINANCIAL MANAGEMENT

9 Hours

Financial management – Scope – Objectives – Time value of money – Methods of appraising project profitability – Sources of finance – Working capital and management of working capital

ACCOUNTING SYSTEM, STATEMENT AND FINANCIAL ANALYSIS

9 Hours

Accounting system – Systems of book-keeping – Journal – Ledger – Trail balance – Financial statements – Ratio analysis – Types of ratios – Significance – Limitations

Theory : 45 Hours

Total: 45 Hours

REFERENCE

1. Prasanna Chandra, “ Fundamentals of Financial Management”,Tata Mcgraw Hill Publishing Ltd., Third Edition,1999.
2. Weston & Brigham, “ Essentials of Managerial Finance”, Cengage Learning, 14th edition, 2007.
3. Pandey, I. M., “Financial Management”, Vikas Publishing house Pvt Ltd., 2009.
4. James C. Van Horne, “Fundamentals of Financial Management”, Prentice Hall, 11th Edition, 2000.
5. James C. Van Horne, “Financial Management & Policy”,Prentice Hall, 12th Edition,2001.
6. M. Y. Khan & P. K. Jain, “Management Accounting & Financial Management”, Tata Mcgraw Hill Education (P)Ltd., seventh Edition, 1985.
7. Management Accounting Principles & Practice -P. Saravanavel



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand the process to plan and develop products

CO2: Understand the process of collecting information and developing product specifications

CO3: Understand the concept generation, selection and testing processes

CO4: Understand the concepts of product architecture, industrial design and design for manufacture

CO5: Understand the basics of prototyping, economic analysis and project planning and execution processes

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	M							S		
CO2		S										
CO3	M	S	S							S		
CO4	M	M								S		
CO5	S	M										

Course Assessment methods:

Direct	Indirect
Internal tests(I, II, III), Assignment, End Semester Exam	1. Course end Survey

INTRODUCTION - DEVELOPMENT PROCESSES AND ORGANIZATIONS - PRODUCT PLANNING

9 Hours

Characteristics of successful product development to Design and develop products, duration and cost of product development, the challenges of product development.

A generic development process, concept development: the front-end process, adapting the generic product development process, the AMF development process, product development organizations, the AMF organization.

The product planning process, identify opportunities. Evaluate and prioritize projects, allocate resources and plan timing, complete pre project planning, reflect all the results and the process.

IDENTIFYING CUSTOMER NEEDS - PRODUCT SPECIFICATIONS

9 Hours

Gathering raw data from customers, interpreting raw data in terms of customer needs, organizing the needs into a hierarchy, establishing the relative importance of the needs and reflecting on the results and the process. Specifications, establish specifications, establishing target specifications setting the final specifications.

CONCEPT GENERATION - CONCEPT SELECTION - CONCEPT TESTING

9 Hours

The activity of concept generation clarify the problem search externally, search internally, explore systematically, reflect on the results and the process.

Overview of methodology, concept screening, concept scoring, caveats.



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Purpose of concept test, choosing a survey population and a survey format, communicate the concept, measuring customer response, interpreting the result, reflecting on the results and the process.

PRODUCT ARCHITECTURE - INDUSTRIAL DESIGN - DESIGN FOR MANUFACTURING

9 Hours

Meaning of product architecture, implications of the architecture, establishing the architecture, variety and supply chain considerations, platform planning, related system level design issues.

Assessing the need for industrial design, the impact of industrial design, industrial design process, managing the industrial design process, is assessing the quality of industrial design.

Definition, estimation of manufacturing cost, reducing the cost of components, assembly, supporting production, impact of DFM on other factors.

PROTOTYPING - PRODUCT DEVELOPMENT ECONOMICS - MANAGING PROJECTS

9 Hours

Prototyping basics, principles of prototyping, technologies, planning for prototypes.

Elements of economic analysis, base case financial mode,. Sensitive analysis, project trade-offs, influence of qualitative factors on project success, qualitative analysis.

Understanding and representing task, baseline project planning, accelerating projects, project execution, postmortem project evaluation.

Theory : 45 Hours

Total: 45 Hours


REFERENCE

1. Ulrich (Karl T)& Eppinger (Steven D) “ Product Design and Development” McGrawHill Inc., Newyork, 1995
2. A K Chitale & R C Gupta, “Product Design and Manufacturing” , Prentice Hall Of India (P) Ltd.,1997
3. Tim Jones, “New Product Development – An Introduction to Multi functional Process”, Butterworth –Heinemann,1997.
4. Boodhroyd Geoffrey, “Product Design for Manufacture and Assembly” Taylor & Francis Group, Second edition, 2002.



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ONE CREDIT COURSES


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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on basic principles of statistical design of experiments

CO2: Collecting experimental data, entry of data in software according to given procedure

CO3: Identifying the procedure for analyzing the data using the appropriate statistical tool, developing relevant models for analysis and interpretation

Pre Requisite : Nil

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S			S								
CO2				S						S		
CO3		S		S	S							

Course Assessment methods:

Direct	Indirect
	1. Course end Survey

EXPERIMENTS:

1.	Data Collection and Processing of Data
2.	Frequency Distribution-Graphical Representation
3.	Calculation of mean, variance, Standard deviation and CV
4.	Probability distributions
5.	Testing of hypothesis-t-test, F-test
6.	Control Charts
7.	ANOVA
8.	Correlation
9.	Regression
10.	Chi-square test

Total: 15 Hours

REFERENCES

1. Montgomery D C Design and Analysis of Experiments, John Wiley & Sons,2004
2. Kothari C P Research Methodology-Methods and Techniques, Mishra Prakeshan 2000
3. Minitab-Software manual
4. SPSS software manual



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U14FTIN02**NEW TRENDS IN PRINTING****Course Outcomes**

After successful completion of this course, the students should be able to

CO1: Acquire knowledge on new printing techniques

CO2: Acquire knowledge on different printing substrate and materials used commercially

CO3: Acquire knowledge on carpet and hometextile printing techniques

CO4: Ability to explain various printing methods, machines and styles for fabric and garment

CO5: Create innovations in the field of printing

Pre Requisite :

U14FTT504 Textile Chemical Processing

U14FTP502 Textile chemical processing laboratory

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S										
CO2		M			S							
CO3		M			S							
CO4		M		S								
CO5			S		S							

Course Assessment methods:

Direct	Indirect
	1. Course end Survey

DIGITAL PRINTING**3 Hours**

Different types, Substrate preparation, Ink Formulation, Digital colour management, Industrial production printers.

TRENDS IN PRINTING:**9 Hours**

Ajrak, Akola, Brushprint, Bagru, Balaotra, 3D print, Dewdrop, Dabu print Flock, Foil, Fluorescent printing, Gold, Jawata, Khari, Pigment, Pearl, Puff, Rubber, Rapid print, Neptoal, Modern abstract prints.

NEW TRENDS:**3 Hours**

Trends in Garment printing, Carpet and Home textile printing

Total: 15 Hours**REFERENCES**

1. Edited by H.Ujiiie "Digital printing of Textiles" , Wood head Publishing Limited 2006
- 2.L.W.C.Miles "Textile Printing" Society of Dyers & Colourists; 2nd revised edition, Jan 2003
3. R. S. Prayag, Technology Textile Printing – Noyes Data Corporation, 1989.



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U14FTIN03 WASTE ELIMINATION AND VALUE STREAM MAPPING IN APPAREL INDUSTRY

Course Outcomes

After successful completion of this course, the students should be able to

CO1: To understand Lean concept in manufacturing perspective

CO2: To gain knowledge on application of Lean Wastes concept and understand its impact on cost of poor quality in the context of apparel manufacturing industry

CO3: To gain skill in application of Value Stream Mapping tool in elimination of Lean Wastes

Pre-requisites:

U14FTT505 Textile and Apparel Quality Evaluation

U14FTT703 Quality Assurance in Apparel Production

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						M	M			M		
CO2		M				M	M			M		
CO3		M			M	M	M			M	M	M

Course Assessment methods:

Direct	Indirect
	1. Course end Survey

INTRODUCTION:

3 Hours

Introduction to Lean concept – Comparison of Lean practice and traditional business practices - Lean practices as distinguished from TQM, Management Systems of QMS, EMS, OSHAS and TPM.

LEAN WASTES

8 Hours

8 Wastages - over production, higher inventory, waiting time, unnecessary conveyance and motion of materials, over processing, rework- repairs - rejections, customer returns, wastage of people talents. profit leakages due to wastages

Cost of Poor Quality – Cost of Quality – calculation of Cost of Poor Quality. 5 S – Seiri, Seiton, Seisō, Seiketsu, Shitsuke – house keeping practices for cleaner production.

VALUE STREAM MAPPING:


4 Hours

Identifying non – value activities in apparel manufacture – analysis and eliminating non – value activities through Value Stream Mapping (VSM)

Total: 15 Hours

REFERENCES

1. Gopalakrishnan N, Simplified Lean Manufacture: Elements, Rules, Tools and Implementation, Prentice Hall of India Learning Pvt. Ltd., 2010
2. Hobbs Dennis P, "Lean Manufacturing Implementation: A Complete Execution Manual for Any Size Manufacturer", Cengage Learning India Private Ltd, NewDelhi, 2009.
3. Rajmanohar T P, "Lean Product Development: Concept and Models", ICFAI Press, 2009.
4. Desai, Aruna, "Lean manufacturing: Perspectives and Applications", ICFAI Press, 2008.
5. Rajmanohar T P, "Cost of Poor Quality: Concept and Applications", ICFAI Press, 2008.


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U14FTIN04 APPLICATION OF SIX SIGMA IN APPAREL MANUFACTURE

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Able to understand the concept of Six Sigma and its application to evaluate and control a process

CO2: Gain knowledge on various metrics used in Designing Six Sigma process, implementing and for evaluating

CO3: To implement six sigma concept in apparel industry

CO4: To improve process by implementing Six sigma

CO5: Work and manage the industry focusing on zero defects.

Pre Requisite :

U14MAT305 Probability and Applied statistics

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2	S	S										
CO3					S							
CO4					S							
CO5							M					

Course Assessment methods:

Direct	Indirect
	1. Course end Survey

DESIGN FOR SIX SIGMA (DFSS):

6 Hours

Six Sigma Basics: Overview and Implementation. Process measurement, Process analysis, Process improvement (Six Sigma and Lean concept) and Process control.

DESIGN FOR SIX SIGMA AND IMPLEMENTATION:

9 Hours

Design for Six Sigma, Six Sigma implementation. Six Sigma Metrics: DPU, DPO, DPMO, Sigma levels, Yield, First Time Yield, Overall Yield, Throughput Yield, Rolled Throughput Yield, Normalized Yield Process Capability Indices: Cp, Cpk, Cpm, Cpkm. Dealing with non-normality through transformations.

Total: 15 Hours

REFERENCES

1. Chowdhury, Subir, "Design for Six Sigma", Dearborn Trade, 2002.
2. Chowdhury, Subir, "The Power of Six Sigma", Pearson Education (Singapore) Pvt. Ltd., 2001.
3. Creveling C M; Sluisky J L; Antis, Jr. D, "Design for Six Sigma Technology and Product Development", Pearson Education (Singapore) Pvt. Ltd., 2004.
4. Truscott William T, "Six Sigma Continual Improvement for Business: A Practical Guide", Elsevier, 2009.

U14FTIN05 CERTIFICATION PROCEDURES FOR PRODUCT AND PROCESS IN APPAREL INDUSTRY

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand the different requirements of various product certification processes in Apparel Industry.

CO2: Understand the different requirements of various process certification processes in Apparel Industry.

CO3: Apply and follow certification procedures for health, safety and environment protection.

Pre-Requisites: NIL

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					M							
CO2		S			M					M		
CO3				S	M			S		M	S	M

Course Assessment methods:

Direct	Indirect
	1. Course end Survey

PROCESS CERTIFICATION:

7 Hours

Cleaner Technology Production (CTP) - Occupational Health and Safety Assessment Specifications (OHSAS) –Worldwide Responsible For Apparel Production (WRAP) - Code of Vendor Conduct. Global Sourcing and Operating Guidelines - Country Assessment Guidelines - Health and Safety Conditions , Human Rights Environment, Legal System, Political, Economic and Social Environment. Business Partner Terms of Engagement (TOE) - Ethical Standards, Legal Requirements, Environmental Requirements, Environmental Philosophy and Guiding Principles. Community Involvement, Employment Standards - Evaluation and Compliance.

PRODUCT CERTIFICATION:

8 Hours


ECO-Labeling - - Oeko-Tex 100, EU Eco-Label for Textiles. Care Labelling - Sun protective labelling - Fibre content labelling - Country of origin labelling - Product Safety Standards (Children's Nightwear and Limited Daywear Having Reduced Fire Hazard) Regulations, Accessories on infants apparel.

FABRIC CERTIFICATION UPF Rated certificate, certification for Fabrics, accessories and trims for children's nightwear and other daywear. Mandatory fabric test certification - Fibre Analysis - (Composition / Fibre Content) Construction, Yarn Count, Dimensional Stability Shrinkage, Spirality - Tensile Strength - Tear Strength - Colour Fastness, Seam Slippage, Pilling, Stretch & Recovery for fabric with elastane - Water Repellancy, Flammability, Water Absorbency/Wicking. Product Safety Certification - Drawcords / ties, Elastic, Zippers, Broken Needle Policy, Pins Policy, Replacement Needle Policy, Shipment certification.

Total: 15 Hours

REFERENCES

1. 'Guidebook for Export to Japan' Japan External Trade Organization (JETRO). 2011
2. New CPSC Testing and Certification Requirements, 2012 -www.intertek.com
3. WRAP – Production facility handbook- www.wrapcompliance.org


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U14FTIN06 SEWING MACHINERY DYNAMICS

Course Outcomes

After successful completion of this course, the students should be able to

CO1: Understand the sewing dynamics of different sewing machines

CO2: Acquire knowledge in influence of sewing dynamics on sewing quality

CO3: Acquire knowledge in apparel design and manufacturing process with respect to end use.

CO4: Understand the relationship between fabric characterizations on sewing parameters.

CO5: Understand the relationship between fabric characteristics and sewing parameters on seam quality.

Pre Requisite:

U14FTT402 Apparel Machinery and Equipment

U14FTP402 Apparel Machinery Laboratory

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S											
CO2	S											
CO3		S										
CO4				S								
CO5				S								

Course Assessment methods:

Direct	Indirect
1. Continuous assessment	1. Course end Survey

DESIGN DYNAMICS:

5 Hours

Apparel Engineering Relating apparel design and manufacture process to end use requirements - comfort, workmanship, appearance and appearance retention, durability, aftercare and other special functional requirements. Application of Kawabata and FAST systems for assessing fabric making-up performance.

ANALYSIS OF STITCHES AND SEAMS:

5 Hours

Identification of Stitches and Seams in different types of garments. Seams and their impact on product performance. Understanding of stitch types and stitch formation processes and its impact on garment performance.

SEWING DYNAMICS:

5 Hours

Compatibility of sewing needle and sewing thread with other sewing parameters. Understanding the structure and specifications of sewing machine needles and their importance in sewing processes. Understanding of relation between fabric characteristics and sewing process parameters.

Theory : 15 Hours

Total: 15 Hours

REFERENCES

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.

2. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001.
3. Singer, "Sewing Lingerie", Cy DeCosse Incorporated, 1991.
4. Laing R.M. and Webster J, "Stitches and Seams", The Textile Institute, Manchester, 1999
5. Technical Advisory Committee of AAMA, " A New Look at Apparel Mechanization", 1978.
6. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998.



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U14FTIN07**DRAPING TECHNIQUES****Course Outcomes**

After successful completion of this course, the students should be able to

CO1: Acquire skills in selecting suitable fabric for the required design and image

CO2: Understand the different draping techniques for the development of different components of the design

CO3: Develop skills in creation of new designs and developing them into a three dimensional garment by draping techniques for designers and industry

Pre Requisite :

U14FTT301 Concepts of Fashion and Design

U14FTT303 Basic Pattern Making & Adaptation

U14FTT304 Garment Component Fabrication

U14FTP302 Garment Component Fabrication Lab

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		S	S	M		M				M		
CO2		S	S		M			M	S			
CO3		S	S	M					S	S	S	S

Course Assessment methods:

Direct	Indirect
1. Continuous assessment	1. Course end survey

EXPERIMENTS:

1.	Effect of fabric on forms for skirts Type of fabric :Wovens, knits; nonwovens, non textile (Leather, paper, fusion of materials etc.) Weight of fabric :light weight, medium weight and heavy weight
2.	Effect of fabric on forms for skirts Types of Silhouettes : bell & balloon, circle & triangle
3.	Intermediate Draping : Skirts- kilt, pegged, dirndl, yoke with flare & flounces
4.	Intermediate Draping : Blouses – Bustiers, Peasant, Gibson Girl with incorporation of collar and sleeve by draping technique
5.	Intermediate Draping : Pants -Harem, Hakama, wide leg pants
6.	Advanced Draping : Asymmetrical and Biased drapes, and
7.	Advanced Draping: Gowns -Shift & Empire

Practical : 15 Hours

Total: 15 Hours

REFERENCES

1. Aldrich W., Fabric, Form and Flat Pattern Cutting, Blackwell Science Limited, London, 1996.
2. Crawford A.A., The Art of Fashion Draping, Om Books International, New Delhi, 2005.
3. Kiisel K., Draping -the complete Course, Laurence King Publishers, 2013



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Course Outcomes

After successful completion of this course, the students should be able to

CO1: Acquire knowledge of the various industrial engineering methods and tools associated with apparel manufacturing

CO2: To demonstrate modern industrial engineering methods and scientific solutions to apparel manufacturing towards economic, environmental, and societal context

CO3: To practice work measurement, work place engineering and lean manufacturing in the apparel manufacturing industry

Pre Requisite:

U14FTT603 Apparel Production planning and control

U14FTT401 Apparel Production Technology

CO/PO Mapping												
(S/M/W indicates strength of correlation) S-Strong, M-Medium, W-Weak												
COs	Programme Outcomes(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S			S	S							
CO2					S	S	S					
CO3			S				M				M	

Course Assessment methods:

Direct	Indirect
1. Continuous assessment	1. Course end survey

5 Hours

WORK MEASUREMENT- Operation break down, Preparation of OB (Operation bulletin), SAM Calculation, Time study, GSD.

METHOD STUDY -Motion analysis of the operations, Ergonomics

5 Hours

WORK PLACE ENGINEERING - M/C Layout and Work station layout, Equipment Technology. Operation Management - Line Set up, Production estimation of a line, WIP Control, Line Balancing, Developing and Maintaining Skill Matrix, Calculating Thread Consumption,

5 Hours

Capacity planning, Cost estimation of a garment. Performance Rating, Incentives schemes. Lean Manufacturing - Value stream mapping, Sixsigma, Zero defects. Pneumatic Controls and Robotics

Theory : 15 Hours

Total: 15 Hours

REFERENCES:

- 1.V.Ramesh Babu Industrial Engineering in Apparel Production Wood head Publishing Limited 2011
2. www.onlineclothingstudy.com
3. Guidelines for Industrial Engineering, KSA Technopak
4. Improving Working Conditions and Productivity in the Garment Industry: An Action Manual International Labour Org
5. Hobbs (Dennis P) LEAN Manufacturing Implementation: A Complete Execution Manual for any Size Manufacturer , Cengage Learning India Private Ltd, NewDelhi