DIPLOMA IN ENGINEERING AND TECHNOLOGY

(1060 / 2060)

DEPARTMENT OF TEXTILE TECHNOLOGY

SEMESTER PATTERN

N – SCHEME

IMPLEMENTED FROM 2020 - 2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY
(SEMESTER SYSTEM)

Syllabus Revision Committee

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY (SEMESTER SYSTEM)

(Implemented from 2020 - 2021)

N – SCHEME

R E G U L A T I O N S*

****Applicable to the Diploma Courses other than Diploma in Hotel Management & Catering Technology.***

1. Description of the Course:

a. Full Time (3 years)

The Course for the Full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters* and the First Year is common to all Engineering Branches.

b. Sandwich (3½ years)

The Course for the Sandwich Diploma in Engineering shall extend over a period of three and half academic years, consisting of 7 semesters* and the First Year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience.

During 4th and/or during 7th semester the students undergo industrial training for six months / one year. Industrial training examination will be conducted after completion of every 6 months of industrial training.

c. Part Time (4 years)

The course for the Part Time Diploma in Engineering shall extend over a period of 4 academic years containing of 8 semesters*, the subjects of 3 year full time diploma courses being regrouped for academic convenience.

*** *Each Semester will have 16 weeks duration of study with 35 hrs. / Week for Regular Diploma Courses and 18 hrs. / Week for Part-Time Diploma Courses.***

The Curriculum for all the 6 Semesters of Diploma courses (Engineering & Special Diploma Courses viz. Textile Technology, Leather Technology, Printing Technology,

Chemical Technology etc.) have been revised and revised curriculum is applicable for the candidates admitted from 2020 – 2021 academic year onwards.

2. Condition for Admission:

Condition for admission to the Diploma courses shall be required to have passed in The S.S.L.C Examination of the Board of Secondary Education, Tamil Nadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in Tamil Nadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board of Secondary Education, Tamil Nadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

3. Admission to Second year (Lateral Entry):

A pass in HSC (academic) or (vocational) courses mentioned in the Higher Secondary Schools in Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination & Should have studied the following subjects.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational		Industrial Training Institutes Courses
		Subjects Studied	Subjects Studied		
			Related subjects	Vocational subjects	
1.	All the Regular and Sandwich Diploma Courses	Physics and Chemistry as compulsory along with Mathematics / Biology	Maths / Physics / Chemistry	Related Vocational Subjects Theory& Practical	2 years course to be passed with appropriate Trade
2.	Diploma Course in Commercial Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretaryship.	-

- For the Diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practicals may also be taken for arriving the eligibility.
- Branch will be allotted according to merit through counseling by the respective Principal as per communal reservation.
- For admission to the Textile Technology, Leather Technology, Printing Technology, Chemical Technology and Commercial Practice Diploma courses the candidates studied the related subjects will be given first preference.
- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*

4. Age Limit: No Age limit.

5. Medium of Instruction: English

6. Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, Tamil Nadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Courses are as given below:

Diploma Course	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Part Time	4 Years	7 Years

This will come into effect from N Scheme onwards i.e. from the academic year 2020-2021.

7. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical subjects.

The curriculum outline is given in Annexure – I.

8. Examinations:

Board Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment. Board Examinations are conducted for 100 marks and reduced to 75.

The total marks for result are 75 + 25 = 100 Marks.

9. Continuous Internal Assessment:

A. For Theory Subjects:

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) Subject Attendance **5 Marks**

(Award of marks for subject attendance to each subject Theory/Practical will be as per the range given below)

80%	-	83%	1 Mark
84%	-	87%	2 Marks
88%	-	91%	3 Marks
92%	-	95%	4 Marks
96%	-	100%	5 Marks

ii) Test # **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Average of the these two test marks will be taken and the marks to be reduced to:	05 Marks
The Test – III is to be the Model Examination covering all the five units and the marks obtained will be reduced to :	05 Marks

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs
Test III	**Model Examination:** Covering all the 5 Units. (Board Examinations-question paper-pattern).	End of 16th week	100	3 Hrs

From the Academic Year 2020 – 2021 onwards.

Question Paper Pattern for the Test - I and Test – II is as follows. The tests should be conducted by proper schedule. Retest marks should not be considered for internal assessment.

Without Choice:

Part A Type questions:	6 Questions × 1 mark	06 marks
Part B Type questions:	7 Questions × 2 marks	14 marks
Part C Type questions:	2 Questions × 15 marks	30 marks
	Total	**50 marks**

iii) Assignment **5 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 5 marks.

iv) Seminar Presentation **5 Marks**

The students have to select the topics either from their subjects or general subjects which will help to improve their grasping capacity as well as their capacity to express the subject in hand. The students will be allowed to prepare the material for the given topic using the library hour and they will be permitted to present seminar (For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and each member of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all theory subjects and carries 5 marks for each theory subject. The respective subject faculty may suggest topics to the students and will evaluate the submitted materials and seminar presentation. (2 ½ marks for the material submitted in writing and 2 ½ marks for the seminar presentation). For each subject minimum of two seminars are to be given and the average marks scored should be reduced to 5 marks.

All Test Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one semester after publication of Board Exam results and produced to the flying squad and the inspection team at the time of inspection/verification.

B. <u>For Practical Subjects:</u>

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:-

a) Attendance : **5 Marks**

(Award of marks same as theory subjects)

b) Procedure/ observation and tabulation/ Other Practical related Work : **10 Marks**

c) Record writing : **10 Marks**

TOTAL : **25 Marks**

- *All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Board examinations.*
- The observation note book / manual should be maintained for 10 marks. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical subject during practical classes should be evaluated properly during the practical class hours with date.
- The Record work for every completed exercise should be submitted in the subsequent practical classes and marks should be awarded for 10 marks for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks (including Observation and Record writing) and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory subject.

The marks awarded for Observation, Record work and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical subject.

10. Communication Skill Practical, Computer Application Practical and Physical Education:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much Stress is given to increase the Communication skill and ICT skill of students.

As per the recommendation of MHRD and under Fit India scheme, the Physical education is introduced to encourage students to remain healthy and fit by including physical activities and sports.

11. Project Work and Internship:

The students of all the Diploma Courses have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

a) Internal assessment mark for Project Work & Internship:

Project Review I	…	**10 marks**
Project Review II	…	**10 marks**
Attendance	…	**05 marks** (Award of marks same as theory subject pattern)
Total	…	**25 marks**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in Board Examinations:

Demonstration/Presentation	25 marks
Report	25 marks
Viva Voce	30 marks
Internship Report	20 marks
Total	**100* marks**

*Examination will be conducted for 100 marks and will be converted to 75 marks.

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year "Project Work & Internship" for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Board examination.

12. Scheme of Examinations:

The Scheme of examinations for subjects is given in Annexure - II.

13.Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the subjects prescribed in the curriculum.
2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subjects* out of the total prescribed maximum marks including both the Internal Assessment and the Board Examinations marks put together, subject to the condition that he/she secures at least a minimum of 4*0 marks out of 100 marks in the Board Theory Examinations and a minimum of 50 marks out of 100 marks in the Board Practical Examinations.*

14. **Classification of successful candidates:**

Classification of candidates who will pass out the final examinations from April 2023 onwards (Joined first year in 2020 -2021) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he/she secures not less than 75% of the marks in all the subjects and passes all the semesters in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate marks in all the semesters put together and passes all the semesters except the I and II semester in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all the semesters put together and passes all the subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class.**

The above classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2023 /April 2024 onwards (both joined First Year in 2020 -2021)

15. Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

DIPLOMA IN TEXTILE TECHNOLOGY (1060)

DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH (2060)

Significance of the N scheme syllabus

Diploma in Textile Technology / Textile Technology (Sandwich) is a programme which mainly deals with the study of the various properties of cotton and other common man-made fibres (like rayons, nylon, polyester etc.), the mechanical processing of these fibres namely spinning, weaving and knitting and the chemical processing namely preparation, dyeing, printing and finishing.

The programme also deals with the study of the functions and working of various mechanisms available in the spinning, doubling, winding, warping, sizing, weaving and knitting machines commonly running in Indian Textile Mills. Due coverage is also given to the study of modern developments in spinning, weaving and garment manufacturing and emerging trends and technologies in the field of Nonwoven and Technical Textiles.

Now, in the present N scheme syllabus emphasis is given to

- Teach Fibre Science and Technology, Yarn Manufacture, Fabric Manufacture, Textile Wet Processing, Garment Technology, Textile Testing, Maintenance of Textile Machinery, Process Control in Spinning, Quality analysis in spinning and weaving preparatory and Textile product costing practical.
- The internship in the curriculum included to give due emphasis on industrial exposure and industrial practices.
- Practical content of the programme is increased to the maximum extent possible, bringing it to 13 theory courses, 14 practical courses and a project work in the programme and the proportion of coverage is mentioned below.
    a. Basic sciences : 19%
    b. Core subjects : 60%
    c. Allied subjects : 21%

The students undergoing these courses may not only get employed as technical staff and middle level management staff in the various textile manufacturing units but also become successful entrepreneurs.

ANNEXURE I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1060/2060 : DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

CURRICULUM OUTLINE

FIRST SEMESTER (FULL TIME)

Col. No.	Subject Code	Subject	Hours Per Week				
			Theory	Drawing	Tutorial	Practical	Total
1	40011	Communicative English I	5				5
2	40012	Engineering Mathematics I	5				5
3	40013	Engineering Physics I	5				5
4	40014	Engineering Chemistry I	5				5
5	40015	Engineering Graphics I		6			6
6	40006	Engineering Physics Practical (semester examination in the second semester)				2	2
7	40007	Engineering Chemistry Practical (semester examination in the second semester)				2	2
8	40001* 40002^	Communication Skill Practical * Computer Application Practical ^				2	2
			20	6		6	32
Extra / Co-Curricular activities		Physical Education					2
		Library					1
Total							35

* For Circuit Branches only

^ For Non-Circuit Branches only

SECOND SEMESTER (FULL TIME)

Col. No.	Subject Code	Subject	Hours Per Week				
			Theory	Drawing	Tutorial	Practical	Total
1	40021	Communicative English II	4				4
2	40022	Engineering Mathematics II	4				4
3	40023	Engineering Physics II	4				4
4	40024	Engineering Chemistry II	4				4
5	40025	Engineering Graphics II		5			5
6	40006	Engineering Physics Practical				2	2
7	40007	Engineering Chemistry Practical				2	2
8	40028	Basics of Industries and Workshop Practical	2			3	5
9	40001* 40002^	Communication Skill Practical * Computer Application Practical ^				2	2
			18	5		9	32
Extra / Co-curricular activities		Physical Education					2
		Library					1
Total							35

* For Non-Circuit Branches only

^ For Circuit Branches only

THIRD SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060310	Fibre Science and Technology	5	-		5
4060320	Yarn Manufacture – I	5	-		5
4060330	Fabric Manufacture – I	5	-		5
4060340	Fibre Identification - Practical		-	5	5
4060350	Yarn Manufacture - I Practical		-	4	4
4060360	Fabric Manufacture - I Practical		-	4	4
4060370	Quality Analysis in spinning and weaving preparatory –Practical		-	4	4
Extra/Cocurricular activities	Physical Education	-			2
	Library/Seminar	-			1
TOTAL		15	-	17	35

FOURTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060410	Basic Engineering	5			5
4060420	Yarn Manufacture – II	5			5
4060430	Fabric Manufacture – II	5			5
4060440	Fabric Structure	5			5
4060450	Yarn Manufacture – II Practical			4	4
4060460	Fabric Manufacture – II Practical			4	4
4060470	Fabric Structure- Practical	-	-	4	4
Extra/co Curricular Activities .	Physical Education	-			2
	Library / Seminar	-	-		1
	Internship – I (2 weeks)	During Summer Vacation			
TOTAL		20		12	35

FIFTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060510	Textile Testing	5			5
4060520	Textile Wet Processing	5			5
	Elective I				
4060531	Advanced Textile Manufacture	5			5
4060532	Technical Textiles				
4060540	Textile Testing Practical			4	4
4060550	Textile Wet Processing Practical			4	4
4060560	Advanced Fabric Design Analysis Practical			4	4
4060570	Entrepreneurship & Start ups			5	5
Extra/Co Curricular activities	Physical Education				2
	Library / seminar				1
	Internship – II (2 Weeks)	During Winter Vacation			
TOTAL		15		17	35

SIXTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060610	Textile Management	5			5
4060620	Garment Manufacture	5			5
	Elective II				
4060631	Maintenance of Textile Machinery	5			5
4060632	Process control in Spinning				
4060640	Garment Manufacture practical			5	5
4060650	Textile Product Costing Practical			6	6
4060660	Project Work & Internship			6	6
Extra/Co Curricular activities	Physical Education				2
	Library / seminar				1
TOTAL		15		17	35

ANNEXURE II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1060/2060 : DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

SCHEME OF THE EXAMINATION

FIRST SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess-ment marks	Board Exam for 100 Marks (Converted to 75)	Total Marks		
40021	Communicative English II	25	100	100	40	3
40022	Engineering Mathematics II	25	100	100	40	3
40023	Engineering Physics II	25	100	100	40	3
40024	Engineering Chemistry II	25	100	100	40	3
40025	Engineering Graphics II	25	100	100	40	3
40006	Engineering Physics Practical	25	100	100	50	3
40007	Engineering Chemistry Practical	25	100	100	50	3
40028	Basics of Industries and Workshop Practical	25	100	100	50	3
40001* 40002^	Communication Skill Practical * Computer Application Practical ^	25	100	100	50	3

* For Circuit Branches only
^ For Non-Circuit Branches only

SECOND SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess-ment marks	Board Exam for 100 Marks (Converted to 75)	Total Marks		
40021	Communicative English II	25	100	100	40	3
40022	Engineering Mathematics II	25	100	100	40	3
40023	Engineering Physics II	25	100	100	40	3
40024	Engineering Chemistry II	25	100	100	40	3
40025	Engineering Graphics II	25	100	100	40	3
40006	Engineering Physics Practical	25	100	100	50	3
40007	Engineering Chemistry Practical	25	100	100	50	3
40028	Basics of Industries and Workshop Practical	25	100	100	50	3
40001* 40002^	Communication Skill Practical * Computer Application Practical ^	25	100	100	50	3

* For Non-Circuit Branches only

^ For Circuit Branches only

THIRD SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum pass for	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam for 100 Marks (Converted to 75 marks)	Total Mark		
4060310	Fibre Science and Technology	25	100	100	40	3
4060320	Yarn Manufacture - I	25	100	100	40	3
4060330	Fabric Manufacture - I	25	100	100	40	3
4060340	Fibre Identification - Practical	25	100	100	50	3
4060350	Yarn Manufacture - I Practical	25	100	100	50	3
4060360	Fabric Manufacture - I Practical	25	100	100	50	3
4060370	Quality Analysis in spinning and weaving preparatory – Practical	25	100	100	50	3

FOURTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam for 100 Marks (Converted to 75 marks)	Total Mark		
4060410	Basic Engineering	25	100	100	40	3
4060420	Yarn Manufacture – II	25	100	100	40	3
4060430	Fabric Manufacture – II	25	100	100	40	3
4060440	Fabric Structure	25	100	100	40	3
4060450	Yarn Manufacture – II Practical	25	100	100	50	3
4060460	Fabric Manufacture – II Practical	25	100	100	50	3
4060470	Fabric Structure- Practical	25	100	100	50	3

FIFTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam for 100 Marks (Converted to 75 marks)	Total Mark		
4060510	Textile Testing	25	100	100	40	3
4060520	Textile Wet Processing	25	100	100	40	3
	Elective I					
4060531	Advanced Textile Manufacture	25	100	100	40	3
4060532	Technical Textiles					
4060540	Textile Testing Practical	25	100	100	50	3
4060550	Textile Wet Processing Practical	25	100	100	50	3
4060560	Advanced Fabric Design Analysis Practical	25	100	100	50	3
4060570	Entrepreneurship & Start ups	25	100	100	50	3

SIXTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam for 100 Marks (Converted to 75 marks)	Total Mark		
4060610	Textile Management	25	100	100	40	3
4060620	Garment Manufacture	25	100	100	40	3
	Elective II					
4060631	Maintenance of Textile Machinery	25	100	100	40	3
4060632	Process control in Spinning					
4060640	Garment Manufacture practical	25	100	100	50	3
4060650	Textile Product Costing Practical	25	100	100	50	3
4060660	Project Work & Internship	25	100	100	50	3

SEVENTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam Marks (Converted to 75 marks)	Total Mark		
4060712	INDUSTRIAL TRAINING & VIVA VOCE	25	100	100	50	3

List of Equivalent Subjects for M - Scheme to N – Scheme

SUBJECTS IN M– SCHEME		EQUIVALENT SUBJECTS IN THE N– SCHEME	
	III SEMESTER		
36031	Fibre Science and Technology	4060310	Fibre Science and Technology
36032	Yarn Manufacture – I	4060320	Yarn Manufacture - I
36033	Fabric Manufacture – I	4060330	Fabric Manufacture - I
36034	Fibre Identification I Practical	4060340	Fibre Identification - Practical
36035	Yarn Manufacture – I Practical	4060350	Yarn Manufacture - I Practical
36036	Fabric Manufacture – I Practical	4060360	Fabric Manufacture - I Practical
30001	Computer Application Practical	40002	Computer Application Practical (I – Semester)
	IV SEMESTER		
36041	Basic Engineering	4060410	Basic Engineering
36042	Yarn Manufacture – II	4060420	Yarn Manufacture – II
36043	Fabric Manufacture – II	4060430	Fabric Manufacture – II
36044	Elementary Textile Design	4060440	Fabric Structure
36045	Yarn Manufacture – II Practical	4060450	Yarn Manufacture – II Practical
36046	Fabric Manufacture – II Practical	4060460	Fabric Manufacture – II Practical
36047	Elementary Textile Design Practical	4060470	Fabric Structure- Practical

List of Equivalent Subjects for M - Scheme to N – Scheme

SUBJECTS IN M – SCHEME		EQUIVALENT SUBJECTS IN THE N – SCHEME	
	V SEMESTER		
36051	Textile Testing	4060510	Textile Testing
36052	Textile Wet Processing	4060520	Textile Wet Processing
36053	Advanced Textile Design	4060440	Fabric Structure
36071	Advanced Textile Manufacture	4060531	Advanced Textile Manufacture
36072	Technical Textiles	4060532	Technical Textiles
36055	Textile Testing practical	4060540	Textile Testing Practical
36056	Textile Wet Processing practical	4060550	Textile Wet Processing Practical
30002	Communication and Life Skill Practical	40001	Communication skill Practical (II – Semester)
	VI SEMESTER		
36061	Textile Management	4060610	Textile Management
36062	Garment Manufacture	4060620	Garment Manufacture
36081	Maintenance of Textile Machineries	4060631	Maintenance of Textile Machinery
36082	Process control in Spinning	4060632	Process control in Spinning
36064	Garment Manufacture Practical	4060640	Garment Manufacture practical
36065	Textile CAD Practical	-	No Equivalent Paper
26066	Garment CAD Practical	-	No Equivalent Paper
26067	Project work	-	No Equivalent paper
	VII SEMESTER		
36092	Industrial Training & Viva Voce	4060712	Industrial Training & Viva Voce

III SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

III SEMESTER

2020 – 2021onwards

FIBRE SCIENCE AND TECHNOLOGY

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060310

Semester : III Semester

Subject Title : FIBRE SCIENCE AND TECHNOLOGY

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
FIBRE SCIENCE AND TECHNOLOGY	5 Hrs	80 Hrs	25	100*	100	3 Hrs.

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	INTRODUCTION	15
II	VEGETABLE FIBRES	15
III	ANIMAL FIBRES	15
IV	REGENERATED FIBRES	14
V	SYNTHETIC FIBRES	14
Test & Model Exam		7
Total		**80**

RATIONALE:

Fibres are the basic raw materials for the manufacture of yarns and fabrics. The ultimate property of a yarn or fabric depends on the property of the fibre in it. Therefore, it is important to study the fibre properties.

Different fibres exhibit different physical and chemical properties. This is due to a number of factors like the material of the fibre, its molecular structure, length and the amount of draft applied during spinning process. Fabrics are made from different types of fibres and their blends are put into specific uses such as summer wear, winter wear, industrial wear etc., depending on their particular properties.

Therefore, it is very important for a Textile student to study the Science of Fibres and the manufacture of man-made fibres.

OBJECTIVES:

- To know about the various classifications of textile fibres, their origin, chemical nature, and properties etc.
- To know about the fibre chemical composition, reaction, methods and uses.
- To know about the Indian & hybrid cotton varieties and their uses.
- To know about the Flax fibre, Linen fibre, Pineapple fibre, Banana Fibre, Jute fibre, and their uses.
- To know about Wool fibre.
- To know about silk fibres.
- To study about different types of spinning methods – manufacture of Viscose rayon.
- To know about Tencel, Lyocell, Modol, Polynosic rayon and HT rayon.
- To know about the manufacture of Nylon 6, Nylon 66, polyester, Acrylic fibres and their properties & uses.
- To know uses of Glass fibre, bamboo, casein, carbon, Nomex and Kevlar fibres.

FIBRE SCIENCE AND TECHNOLOGY

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topics	Hours
I	**INTRODUCTION** Definition of Textile Fibre. Classification of Textile Fibres based on origin and chemical nature - Properties required for an ideal textile fibre - Identification of Textile Fibres (cotton, silk, wool, viscose, nylon, polyester acrylic) - Microscopic test, burning test, Solubility test - Types of polymerization - Addition and condensation polymerization. Definition of monomer, polymer, repeat unit, polymerization, Degree of polymerization, Staple fibre, filament yarn, mono filament, multifilament, spun yarn & ply yarn. spinning methods of man-made fibres – melt, dry and wet spinning techniques. Essential and desirable properties of textile fibre	15
II	**VEGETABLE FIBRES** Cotton: Cotton producing countries and states in India - Classification of commercial cottons, Indian hybrid cottons with their characteristic - Chemical structure of cellulose, degree of polymerization of cotton cellulose, stages in the growth and development of the cotton fibre and its physical structure - Physical and chemical structures of cotton fibre - Physical and chemical properties of cotton - Uses. Brief study of organic fibres Linen: Linen producing countries - Physical and chemical properties - Uses. Jute: Jute producing countries and states in India – Fibre extraction process - Retting process - Physical and chemical properties – Uses. End uses of Bamboo, soya, sisal, Banana and Pineapple fibres.	15
III	**ANIMAL FIBRES** Wool: Wool producing countries - Classification of wool with respect to fleece and breeds - Production of Clean wool from Raw wool - Physical and chemical structure - Physical and chemical properties - Comparison of woollen and worsted yarns - Uses. Felting of wool Silk: Silk producing countries - Types of silk (Mulbery, Eri, Muga) -	15

	Sericulture-life cycle of silk warm - Reeling, throwing and doubling - Degumming of silk - Weighting of silk - Physical and chemical properties – Uses.	
IV	**REGENERATED FIBRES** Drawing and its importance. Viscose Rayon: Viscose Rayon manufacturers in India - Raw material – manufacturing Process with flow chart - Properties - uses. Polynosic Rayon: Comparison of chief characteristics of viscose with polynosic rayons. Process sequence in the manufacture of Polynosic rayons Properties and Uses - High Wet Modulus rayon, HT Rayon, Tencel Rayon, Lyocell, Modal, polynosic	14
V	**SYNTHETIC FIBRES** Nylon and Polyester manufacturers in India. Nylon – 6,6: Raw material – manufacturing Process with flow chart - properties - uses. Nylon – 6: Raw material – manufacturing Process with flow chart - properties - uses Polyester: Raw material – manufacturing Process using PTA route with flow chart - properties - uses. Acrylic Fibre: Raw material - manufacturing Process with flow chart - properties - uses. Applications of the following fibres: Glass, Asbestos, Casein, Carbon, Nomex, Kevlar & Polyurethane. Fully-drawn yarn (FDY) and Partially Oriented Yarn (POY)	14

Text Books

S.No	TITLE	AUTHOR	PUBLISHERS	YEAR OF PUBLICATION
1	Textile fibres	V.A. Shenai	"Technology of Textile Processing". Sevak publications, Bombay	1997
2	Textile fibres Vol I, Vol II	J.Gordon cook	Woodhead Publishing Ltd. Cambridge England	2001
3	Manmade fibres	P.W. Moncrieff	Newness - Butterworths, London	1975

Reference Books

S.No	TITLE	AUTHOR	PUBLISHERS	YEAR OF PUBLICATION
1	Textile Science	E.P.C. Gohle and L.D. Vilensty	CBS Publishers and Distributors Delhi, India	1987
2	Fibre Science and Technology	S.P. Mishra	New age International (p) Ltd Daryaganj, New Delhi-110002	2005
3	Dyeing and chemical Technology of Textile Fibres	ER. Trotman	British high commission Madras – 2	1970

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N - SCHEME

III SEMESTER

2020 - 2021 onwards

YARN MANUFACTURE - I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060320
Semester	:	III Semester
Subject Title	:	YARN MANUFACTURE - I

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
YARN MANUFACTURE - I	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	GINNING AND BLOWROOM	15
II	MODERN DEVELOPMENTS IN BLOW ROOM	15
III	CARDING	15
IV	MODERN DEVELOPMENTS IN CARDING	14
V	DRAW FRAME	14
	TEST & REVISION	07
Total		80

RATIONALE

The basic idea about Ginning, blending, mixing, blow room machineries and the working of the various components of the blow room are essential for the understanding of the preparation to spinning process. The students will be able to understand the Objectives, principles and Modern developments in carding and drawing, principles of doubling and drafting in draw frame and other functional components. This will enable the students to perform the necessary setting changes required for processing different counts and do calculations related with the production and efficiency of the machines, draft applied etc.

OBJECTIVES

- To acquire knowledge about the various blow room machineries.
- To understand the working of various opening and cleaning machines.
- To understand the working of scutcher unit.
- To calculate the speed, production and efficiency of blow room machinery.
- To acquire knowledge about carding m/c.
- To know the various settings in a card.
- To understand the modern developments in a card.
- To calculate the speed, draft, production and efficiency in cards.
- To know the different drafting systems in draw frame.
- To calculate the speed, draft, production and efficiency in draw frames.

4060320 - YARN MANUFACTURE I

DETAILED SYLLABUS

Content : Theory

Unit	Name of the Topic	Hours
1	**GINNING AND BLOWROOM:** **Ginning:** Objectives - types of gins and their suitability. Blending - Objectives and their effects on yarn quality - Fibre properties to be considered for blending - Homogeneous Mixing – Definition and importance - Typical mixing for coarse, medium and fine counts - Comparison between mixing and blending - Mixing and blending equipment - Working of multi mixer, unimix and Automatic bale plucker. Blow room: Objectives of blow room process - Principles of opening and cleaning - Description and working of Mixing bale opener (MBO), Varioclean/Uniclean, Mono cylinder, step cleaner, Flexi cleaner, Cleanomat - Study of scutcher - Krischner beater - Piano feed regulating motion, Automatic Lap forming and doffing device.	15
2	**MODERN DEVELOPMENTS IN BLOW ROOM:** Salient features of modern blow room - Study of material transportation fan, condensers, distributors, filter room, Automatic Waste Evacuation Systems (AWES) and Automatic waste baling system, metal detectors, Fire detectors and diverters – Study of Contamination and machine used for contamination clearers - Blow room sequences employed using latest openers and beaters suitable for fine, medium and coarse cotton (flow chart only) - Defects in blow room laps, causes and remedial measures - Popular manufacturers of modern Blow room machines - Calculation pertaining to production of scutcher and cleaning efficiency of beaters.	15
3	**CARDING:** Objectives and principles of carding - carding and stripping actions - passage of material through HP card. Study of different parts of a carding machine and their functions. Heel and toe arrangement in flats. Card Settings recommended for cotton and manmade fibers. Brief study about grinding of card cylinder and doffer. Defects in card sliver, their causes and	15

	remedies. Hook formation in card sliver. Calculation pertaining to Draft, production and cleaning efficiency.	
4	**MODERN DEVELOPMENTS IN CARDING:** Modern development in different regions – licker-in, flats, cylinder. Study of chute feed system, advantages and disadvantages. Brief study of metallic wire specifications for Cotton process in Licker-in, Cylinder and Doffer (PPSI, Angel of wire point, Height and width). Study of Web doffing device – India roll. Brief study of auto leveller - Open and closed loop systems - Dust extraction system in card - Automatic Waste Evacuation System (AWES) – Salient features of modern carding machine. Popular manufacturers of modern Carding machines : speeds and production particulars	14
5	**DRAW FRAME:** Objectives of drawing - principles of doubling and drafting at draw frame - Study of fibre arrangements in the carded and drawframe slivers – study of Breaker and Finisher Drawing - Functions of different parts of draw frame - Passage of material through modern draw frame - Draft and its distribution - Roller weighting systems - spring and pneumatic weighting systems. Roller settings and its importance – Working of 3 over 3, 3 over 5 and 4 over 3 drafting systems with pressure bar- Salient features of modern draw frames - Brief study of auto levellers in modern draw frames – Brief study of sliver quality monitoring device, stop motions & can changing systems - Sliver defects in draw frame their causes and remedies - Popular manufacturers of modern Draw Frames. Calculation pertaining to Draft and production.	14

TEXT BOOK:

S.No.	Title of the book	Author	Publisher	Year
1	Opening and cleaning	W.A.Hunter	The Textile Institute Manchester, U.K.	1992

REFERENCE BOOKS:

S.No.	Title of the book	Author	Publisher	Year
1	Cotton spinning	W.S.Taggart	Universal Book Corporation 546, JER Mohal Dhobi Talav, Bombay-400072	1996
2	Short Staple Spinning Series Volume I, II & III	W.Klein	The Textile Institute Manchester, U.K.	1987
3	Rieter Manual of spinning Volume 1, 2, 3	W. Klein	Rieter Machine works Ltd, Wintherthur	2016

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
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II YEAR

N- SCHEME

III SEMESTER

2020 – 2021 onwards

FABRIC MANUFACTURE I

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	**:**	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	**:**	**4060330**
Semester	**:**	III Semester
Subject Title	**:**	FABRIC MANUFACTURE – I

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Fabric Manufacture – I	5	80	25	100*	100	3 Hrs.

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	TOPIC	HOURS
I	Warp and weft winding	15
II	Warping and sizing	15
III	Drawing-in, denting and calculations	15
IV	Loom – primary motions	14
V	Loom - secondary and auxiliary motions	14
Test & Model Exam		7
Total		80

RATIONALE

A basic knowledge about the different processes like cone winding, pirn winding, warping, sectional warping, sizing, drawing-in and denting are essential for the students to understand the sequence of operations in the weaving preparatory processes. Hence they must be taught to the students to enhance their knowledge and skill in the setting and operation of the preparatory machines and also to perform necessary weaving preparatory calculations.

OBJECTIVES

- To know the objective of winding, different types of tensioning devices, their uses, yarn clearers and package faults
- To know about High speed warping machine, salient features –Faults on.
- To understand about the Sizing process, various controls Sizing ingredients,
- To know about plain power loom – primary, secondary and auxiliary mechanisms
- To know about Drawing-in Denting, yarn numbering systems.
- To understand various calculations of winding, warping and sizing

.

4060330 - FABRIC MANUFACTURE – I

DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
I	**WARP AND WEFT WINDING** Warp Winding: Brief study of Sequence of Processes in Weaving Preparatory – Objectives of Warp Winding– Passage of material through Fully Automatic Cone Winding Machine and its salient features – Study of Automatic tension – Electronic yarn clearer -Splicing – Types of Splicing – Salient features of spliced yarn –Clearing Efficiency - Package Faults – Causes and Remedies. Weft Winding**:** Objectives of Weft Winding – Advantages of Rewound Weft Over Direct Weft – Passage of material through High-Speed Automatic Pirn Winder and its salient features – Bunch and its necessity.	15
II	**WARPING AND SIZING** Warping: Objectives - Passage of material through High-Speed Beam Warping Machine – Types of Creels – Electrical Warp Stop Motion – Salient features of Modern Warping Machines, Beam Faults – Causes and Remedies. Sectional Warping: Need for Sectional Warping–Passage of material through a Computerized Sectional Warping machine. Sizing: Objectives – Different types of Sizing ingredients and their functions – Size Pick-up – Factors affecting Size Pick-up – Study of the modern Size box with a simple sketch– Moisture Control – Stretch Control – Temperature Control – Size Level Control – Yarn Migration and its effects– Environmental and Safety Aspects in Sizing – Passage of material through Multi Cylinder Sizing Machine - Beam defects – Causes and remedies.	15

III	**DRAWING-IN, DENTING AND CALCULATIONS** Drawing-in and Denting: Object of Drawing-in and Denting, Object of Leasing–Methods of Leasing – Droppers – Types and their Purpose – Objectives of Warp Knotting –Manual and Mechanical Warp Knotting methods – Loom Gaiting. Yarn Numbering Systems : Different Yarn Numbering Systems– Direct Systems (Tex, Denier) –Indirect Systems (English Cotton, Metric Cotton and French Cotton systems) – Calculation of Length, Weight and Count of Yarns based on the above Systems– Conversion of Count from one system to another (Limited to the systems mentioned above)– Plied Yarn Count Calculations. Preparatory Calculations: Production Calculations of Warp Winding, Weft Winding, Warping and Sizing machines.	15
IV	**LOOM – PRIMARY MOTIONS** Introduction to Weaving: Passage of Material through Power loom – Definition of Right hand, Left hand looms and Shuttles. Shedding: Objectives of Shedding – Working of Negative tappet shedding mechanism with a simple sketch –– Brief study of E-Shedding mechanism with a simple sketch. Picking: Objectives of Picking – Types of Picking – Working of Cone Over Picking and Side lever Under Picking Mechanisms with simple sketches– Advantages and Disadvantages of Over and Under Picking Mechanisms. Beat-up: Object of Beat-up – Study of the parts of the Sley-Crank Arm beat up mechanism with a simple sketch– Eccentricity of Sley's Motion – Factors affecting Eccentricity of Sley. Shuttle box : Purpose of shuttle box – shuttle checking devices – reed alignment with shuttle box - rebounding of shuttle causes and remedies.	14

V	**LOOM - SECONDARY AND AUXILIARY MOTIONS** Take up motions: Objectives - Types - Working of Seven Wheel Take up Motion with a line sketch —Working of Positive Continuous Take up Motion with a simple sketch- Anti-Crack Motion. Let-off Motion: Objectives - Types - Working of Negative let-off Motion - Control of Warp Tension - Oscillating back rest and its functions. Other Mechanisms: Functions of Weft fork Motion, Warp Protecting Mechanism, Brake Motion, Fly Wheel, Lease Rods, Types of Heald wires, Reed count, and Temples - Types and their uses.	14

REFERENCE BOOKS:

Contents: Theory

/S.No	Title	Author	Publishers	Year of Publishing
1	Hand book of weaving	Dr Sabit Adhenur	Technomic Publishing Compnay – INC, Lancester, basel , UK	2001
2	Modern Preparation and Weaving Machinery	A.Ormerod	Butterworths , London	1983
3	Weaving machines, mechanisms and management	Talukdar , Sriramulu, Ajgonkar	Mahajan publishers (P) ltd Mumbai	1988
4	Weaving Calculations	R.Sengupta	D.B.Taraporevala sons & co Ltd., Mumbai	1996
5	Textile sizing	Bhuvanesh C.Goswami & Rajesh D Anand jiwala	Marshel dekker, INC New York	2004

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II YEAR

N- SCHEME

III SEMESTER

2020 – 2021 onwards

FIBRE IDENTIFICATION PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060340
Semester	:	III Semester
Subject Title	:	FIBRE IDENTIFICATION PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FIBRE IDENTIFICATION PRACTICAL	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

To enhance the practical knowledge to identify the natural and man-made fibres by microscopical appearance, solubility and burning tests, also to acquire knowledge to identify the blend proportion in yarn and fabric.

OBJECTIVES:

- To identify the natural fibre with longitudinal views
- To identify the Man-made fibre by examining the longitudinal views
- To determine the mean twist of continuous multifilament yarn.
- To identify the natural fibre using solvent.
- To identify the man-made using solvent.
- To identify the natural fibres by the burning tests.
- To identify the man-made fibre by the burning tests

- To determine the blend proportions in a spun yarn using solvents. (P/C, P/V).
- To determine the blend proportions of the given fabric (P/C, P/V).
- To determine the mean linear density of monofilament yarns.
- To determine the mean linear density of multifilament yarns.
- To determine the mean linear density of texturised yarns.

GUIDELINES:

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

DETAILED ALLOCATION OF MARKS

Single Experiment is to be given per student

PARTICULARS	**MARKS**
Experiment	60 marks
Write up / diagram / calculations	30 marks
Viva	10 marks
Total	100 Marks

LIST OF EXPERIMENTS

1. Examination of the longitudinal views of the given natural fibres (cotton, silk, wool and jute) by means of a microscope.
2. Examination of the longitudinal views of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) by means of a microscope.
3. Determination of the mean twist in the given continuous multifilament yarn and its CV %
4. Examination of the solubility of the given natural fibres (cotton, silk, wool and jute) with suitable solvents.
5. Examination of the solubility of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) with suitable solvents.
6. Identification of the given natural fibres (cotton, silk, wool and jute) by burning tests.
7. Identification of the given synthetic fibres (Viscose rayon, Polyester, Nylon and Acrylic) by burning tests.
8. Determination of the blend proportions of the given spun yarns (P/C, P/V).
9. Determination of the blend proportions of the given fabric (P/C, P/V).
10. Determination of the linear density of the given monofilament synthetic yarns.
11. Determination of the linear density of the given multifilament synthetic yarns.
12. Determination of the linear density of the given texturised yarns.

List of equipment required for a batch of 30 students.

1. Dye bath - 2
2. Glass plate – 4
3. Microscope – 1
4. Bunsen burner – 2
5. Wrap reel – 1
6. Single Yarn twist tester – 1
7. Conical flask – 10
8. Test tube – 10
9. Different types of fibres and blended fabrics.

MODEL QUESTION PAPER

1. Examine the longitudinal views of the given natural fibres (cotton, silk, wool and jute) by means of a microscope.
2. Examine the longitudinal views of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) by means of a microscope.
3. Determine the mean twist in the given continuous multifilament yarn and its CV %
4. Examine the solubility of the given natural fibres (cotton, silk, wool and jute) with suitable solvents.
5. Examine the solubility of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) with suitable solvents.
6. Identify the given natural fibres (cotton, silk, wool and jute) by burning tests and solubility tests.
7. Identify the given synthetic fibres (Viscose rayon, Polyester, Nylon and Acrylic**)** by burning tests and solubility tests.
8. Determine the blend proportions of the given spun yarns (P/C, P/V).
9. Determine the blend proportions of the given fabric (P/C, P/V).
10. Determine the linear density of the given monofilament synthetic yarns.
11. Determine the linear density of the given multifilament synthetic yarns.
12. Determine the linear density of the given texturised yarns.

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DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

III SEMESTER

2020 – 2021 onwards

YARN MANUFACTURE - I PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(to be Implements from the student Admitted from the year 2020-2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060350
Semester	:	III Semester
Subject Title	:	YARN MANUFACTURE – I PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
YARN MANUFACTURE – I PRACTICAL	4Hrs	64Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

In Diploma level engineering education, skill development plays a vital role. The skill development can be achieved by on hand experience in various instruments, apparatus and equipment. This is accomplished by doing engineering related experiments in practical classes in various laboratories.

OBJECTIVES

BLOW ROOM

- To practice the settings of the blow room machinery such as, Hopper bale breaker, Axi-flow Cleaner, Mono cylinder, E.R.M. cleaner and Scutcher.
- To draw the gearing plan and calculate the speed of various parts of the blow room machinery such as, Hopper bale breaker, E.R.M. cleaner and Scutcher.
- To calculate the production and efficiency of the blow room line.

CARDING

- To practice the settings of carding machine for processing long, medium and short staple cottons..
- To draw the gearing plan and calculate the speed of various parts of the carding machine.
- To calculate the Drafts between the various carding elements of the carding machine and to calculate the Draft constant of the machine.
- To calculate the production and efficiency of the carding machine.

DRAW FRAME

- To practice the settings of Draw frame for processing long, medium and short staple cottons.
- To draw the gearing plan and calculate the speed of various parts of the Draw frame.
- To calculate the Drafts between the various drafting rollers of the Draw frame and to calculate the Draft constant of the machine.
- To calculate the production and efficiency of the Draw frame.

GUIDELINES:

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

DETAILED ALLOCATION OF MARKS

Single Experiment is to be given per student

PARTICULARS	**MARKS**
Experiment	50 marks
Write up / diagram / calculations	40 marks
Viva - Voce	10 marks
Total	100 Marks

LIST OF EXPERIMENTS

1. Estimation of the speeds of various parts of Mixing bale opener / Based on the given gearing diagram.
2. Estimation of the speeds of various parts of Flexi cleaner / Based on the given gearing diagram
3. Estimation of the production of scutcher per day of 8 hrs from the data available in the machine / Based on the given gearing diagram
4. Estimation of the speeds and draft calculation of the carding machine based on the given gearing diagram.
5. Calculation of Actual Draft and Machine Draft in carding machine using the given data.
6. Estimation of the draft change wheel for a given lap hank to produce the required hank of Sliver in a card.
7. Studying of the various card settings and set the Licker-in, Doffer Zones & Flat region of the card to process long staple cotton.
8. Estimation of the production of the card per day from the data available in the machine.
9. Drawing the gearing plan of Draw Frame and calculation of a) Draft between intermediate rollers b) Total draft c) Draft constant d) Tension draft and creel draft.
10. Drawing the gearing plan of Draw Frame and calculation of

    a) Front roller speed b) Production per day of 8 hour (assuming the Hank delivered)
11. Calculation of the draft change wheel for a given sliver hank to produce the required hank of sliver in a Draw frame.
12. Studying of the Draw frame settings and setting the Draw frame to process Long / Medium / Short staple cotton.

List of equipment required for a batch of 30 students.

1. **Blow room, Carding and Draw frame**

   Material: - Blow room laps, carding sliver and Draw frame sliver
2. **Carding:**

   Carding machine – 1
3. **Drawing**:

   Drawing Machine – 1

SPECIFIC INSTRUCTIONS TO CARRY OUT IN THE PRACTICAL CLASS WORK AS WELL AS THE BOARD PRACTICAL EXAMINATIONS

The students are instructed

1. To do the activities which are pertaining only to the specific experiments they are doing
2. To maintain their work place clean and tidy
3. To handle the tools and other gauges properly and with due care.
4. Not to wander from place to place unnecessarily

MODEL QUESTION PAPER

1. Estimate the speeds of various parts of Mixing bale opener / Based on the given gearing diagram.
2. Estimate the speeds of various parts of Flexi cleaner / Based on the given gearing diagram
3. Estimate the production of scutcher per day of 8 hrs from the data available in the machine / Based on the given gearing diagram
4. Estimate the speeds and draft calculation of the carding machine based on the given gearing diagram.
5. Calculate the Actual Draft and Machine Draft in carding machine using the given data.
6. Estimate the draft change wheel for a given lap hank to produce the required hank of Sliver in a card.

7. Study the various card settings and set the Licker-in, Doffer Zones & Flat region of the card to process long staple cotton.
8. Estimate the production of the card per day from the data available in the machine.
9. Draw the gearing plan of Draw Frame and calculation of a) Draft between intermediate rollers b) total draft c) Draft constant d) Tension draft and creel draft.
10. Draw the gearing plan of Draw Frame and calculation of

    a) Front roller speed b) Production per day of 8 hour (assuming the Hank delivered)

11. Calculate the draft change wheel for a given sliver hank to produce the required hank of sliver in a Draw frame.
12. Study the Draw frame settings and setting the Draw frame to process Long / Medium / Short staple cotton.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

III SEMESTER

2020 – 2021 onwards

FABRIC MANUFACTURE - I PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	**:**	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	**:**	4060360
Semester	**:**	III Semester
Subject Title	**:**	FABRIC MANUFACTURE - I PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instruction		Examination			
			Marks			Duration
Fabric Manufacture - I Practical	Hours/ Week	Hours/ Semester	Internal Marks	Board Exam	Total	
	4	64	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

RATIONALE:

To enhance the practical knowledge in plain loom construction, gearing plan and speed. To understand the various parts in plain power loom. The timing and settings also given for better understanding of each mechanism. These fundamentals help the students to understand the automatic and shuttle less weaving machine mechanisms.

OBJECTIVES:

Shedding

- To study the various parts of the Tappet shedding mechanism with timing and settings.

Picking

- To study the various parts of the Cone over pick mechanism with timing and settings.
- To study the various parts of the Under-pick mechanism with timing and settings.

Take-up

- To study the various parts of the 7 wheel take-up motion with timing and settings.

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Let-off

- To study the various parts of the negative let-off mechanism with back rest settings.

Auxiliary Motions

- To study the various parts of the loose reed / fast reed mechanism with timing and settings.
- To study the various parts of the weft fork mechanism with timing and settings.

Shuttle box

- To study the various parts of the shuttle box of an over pick loom with reed alignment for the given shuttle.

LIST OF EXPERIMENTS

1. Sketching the gearing plan of a plain power loom and calculate the speed of the loom.
2. Sketching the construction of plain power loom and identifying the function of each mechanism.
3. Sketching the tappet shedding mechanism and setting it for proper timing and working.
4. Sketching the cone over pick mechanism and setting it for proper timing and working.
5. Sketching the under pick (Lever / Cone) mechanism and setting it for proper timing and working
6. Sketching the beat-up mechanism and set it for proper timing and working
7. Sketching the 7-wheel take-up motion and set it for proper timing and working.
8. Sketching the negative let-off mechanism and set it with timing and back rest settings.
9. Sketching the Loose reed mechanism set it for proper timing and working.
10. Sketching the Fast reed mechanism set it for proper timing and working.
11. Sketching the shuttle box of an over pick loom and set it with reed alignment for the given shuttle.
12. Sketching the Side weft-fork mechanism and set it for proper timing and working.

List of equipment required for a batch of 30 students.

1. Plain power looms – 3 Nos

DETAILED ALLOCATION OF MARKS

PARTICULARS	**MARKS**
Experiment	50 marks
Write up / diagram / calculations	40 marks
Viva - Voce	10 marks
Total	100 Marks

GUIDELINES:

- All the twelve experiments given in the list of experiments should be completed
- for the semester practical examination.
- In order to develop best skills every student should be provided with a separate
- machine for each mechanism for better understanding in the laboratory.
- The external examiners are requested to ensure that a single experimental question
- should not be given to more than two students while examining a batch of 30
- students during Board Examinations

4060360 - FABRIC MANUFACTURE - I PRACTICAL

Model Question paper

1. Sketch the gearing plan of a plain power loom and calculate the speed of the loom.
2. Sketch the construction of plain power loom and identify the function of each mechanism.
3. Sketch the tappet shedding mechanism and set it for proper timing and working.
4. Sketch the cone over pick mechanism and set it for proper timing and working.
5. Sketch the under pick (Lever / Cone) mechanism and set it for proper timing and working.
6. Sketch the beat-up mechanism and set it for proper timing and working.
7. Sketch the 7-wheel take-up motion and set it for proper timing and working.
8. Sketch the negative let-off mechanism and set it with timing and back rest settings.
9. Sketch the Loose reed mechanism set it for proper timing and working.
10. Sketch the Fast reed mechanism set it for proper timing and working.
11. Sketch the shuttle box of an over pick loom and set it with reed alignment for the given shuttle.
12. Sketch the Side weft-fork mechanism and set it for proper timing and working.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

III SEMESTER

2020 – 2021 onwards

QUALITY ANALYSIS IN SPINNING AND WEAVING PREPARATORY- PRATICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : **4060370**

Semester : III Semester

Subject Title : QUALITY ANALYSIS OF SPINNING AND WEAVING PREPARATORY - PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
QUALITY ANALYSIS IN SPINNING AND WEAVING PREPARATORY PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

RATIONALE

To enhance the practical knowledge to identify the natural and man-made fibres by microscopical appearance, Linear density and, also to acquire knowledge to identify the stable length in fibres

OBJECTIVES:

- To identify the natural fibre with staining tests.
- To determine the stable length man-made fibre.
- To determine the linear density in Flat yarns.
- To determine the hank of the lap, card sliver and draw frame sliver
- To find out the viscosity of starch paste

GUIDELINES

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

DETAILED ALLOCATION OF MARKS

PARTICULARS	**MARKS**
Experiment	50
Write up / diagram / calculations	40
Viva - Voce	10
Total	100

LIST OF EXPERIMENTS

1. Determination of the fibre effective length using baer sorter.
2. Determination of the mean cut - length and crimp of given staple fibre by the oiled plate technique and calculated the CV%.
3. Determination of the mean linear density of the flat yarns and calculate the linear density and CV%.
4. Estimation of the mean linear density and CV% of the given Stable fiber by the cut bundles method.
5. Identifying the given fibre by the staining tests.
6. Determination of the hank of blow room lap by weighing method.
7. Determination of the hank and CV% of the card sliver by weighing method.
8. Determination of the hank and CV% of the draw frame sliver by weighing method.
9. Determination of the hank and CV% of the simplex roving by weighing method.
10. Determination of the trash percentage in the given cotton.
11. Finding out the viscosity of starch paste.
12. Analysing the different kind of woven fabric defects (like warp streaks, weft streaks, oil stain, batch, hole, slub, improper knots)

List of equipment required for a batch of 30 students.

1. Dye bath - 1
2. Glass plate – 4
3. Wrap reel – 1
4. Conical flask – 10
5. Test tube – 10
6. Different types of fibres.

MODEL QUESTION PAPER

1. Determine fibre effective length using baer sorter.
2. Determine the mean cut - length and crimp of given staple fibre by the oiled plate technique and calculated the CV%.
3. Determine the mean linear density of the flat yarns and calculate the linear density and CV%.
4. Estimate the mean linear density and CV% of the given Stable fiber by the cut bundles method.
5. Identify the given fibre by the staining tests.
6. Determinate the hank of blow room lap by weighing method.
7. Determine the hank and CV% of the card sliver by weighing method.
8. Determine the hank and CV% of the draw frame sliver by weighing method.
9. Determine the hank and CV% of the simplex roving by weighing method.
10. Determine the trash percentage in the given cotton.
11. Find out the viscosity of starch paste.
12. Analyse the different kind of oven fabric defects (like warp streaks, weft streaks, oil stain, batch, hole, slub, improper knots)

IV SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 – 2021 onwards

BASIC ENGINEERING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060410

Semester : IV Semester

Subject Title : BASIC ENGINEERING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BASIC ENGINEERING	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

Topics and Allocation of Hours

UNIT	TOPIC	HOURS
I	**BASICS OF MECHANICAL ENGINEERING -1**	15
II	**BASICS OF MECHANICAL ENGINEERING -II**	15
III	**BASICS OF ELECTRICAL ENGINEERING**	14
IV	**BASICS OF ELECTRONICS ENGINEERING**	14
V	**MEASURING INSTRUMENTS AND SENSORS**	15
Test & Model Exam		7
Total		**80**

RATIONALE

The basic fundamental idea about the Fuels, pump, and Humidification, Air conditioning, Transmission of motion and power, A C motors Semiconductors and different types of meter will be taught to the students. To enhance the basics of Mechanical Engineering, Electrical Engineering and Electronics Engineering

OBJECTIVES

- To have knowledge of fuel, steam, pumps, air conditioning and bearings.
- To know about lubrication, clutches, brakes, belts, chains, gears, maintenance of machineries.
- To have knowledge of fundamentals of electrical engineering, A.C motors and transformers.
- To understand the fundamental of electronics engineering and transducers.
- To know about measuring instruments, sensors, and earthing.

4060410 - BASIC ENGINEERING

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Basics of Mechanical Engineering -I** Fuels: Definition—Examples of different types of fuels— Definition of Calorific Value of Fuel. Boilers: Function—Types ofBoilers—Advantages and Disadvantages of Fire tube and Water tube Boilers—Uses of Steam for Textile Applications. Suction: Definition– Various Applications of Suction in Textile Machines. Pumps: Functions—Types of Pumps—Study of the working of a Centrifugal Pump, Reciprocating pump. Air Compressors: Functions—Types of Air Compressors—Study of the working of a Single Acting Single Stage Reciprocating Air Compressor with a simple sketch — Uses of Compressed Air in Textile Applications. Humidification: Definition— Principles of Humidification— Definition of Absolute and Relative Humidity— Importance of Humidification in Textile Industry. Air Conditioning: Definition — Principles of Air Conditioning— Study of the working of a Window type Air Conditioner with a simple sketch.	15
II	**Basics of Mechanical Engineering -II** Bearings: Functions— Need and Importance of Bearings—Types of Bearings—Factors for Selection of Bearings — Brief study of the Construction of Ball, Roller and Needle Bearings with simple sketches. Lubrication:	15

	Definition—Purpose of Lubrication—types of lubricants — applications of lubricants. Transmission of Motion and Power: Different types of Belt drives—Brief study of Flat belt, V belt and Gear belt drives — Merits and Demerits of the different belt drives—Application of the Belt drives in Textile Machines—Brief study of Spur, Helical, Bevel, Worm and Worm gear drives, Pawl and Ratchet drives and their Advantages and Disadvantages— Brief study of Cams and followers—different types of Cams and Followers - Applications of the above drives in Textile Machines -Variable Speed drives—Need for Variable Speed drives in Textile machines — Study of the working of Stepless Cone Pulleys and PIV drives for changing speed. Maintenance: Definition — importance of maintenance textile industry — types of maintenance — benefits of preventive maintenance — importance of repair and maintenance — maintenance audit - Maintenance standard — Advantages.	
III	**Basics of Electrical Engineering** Basic Ideas - Creation of magnetic field – Right Hand Thumb rule electromagnetic Induction – Faraday's laws of Electromagnetic induction- Fleming's Right-Hand rule – Fleming Left Hand rule – Ohm's law. (Statement only, No derivations or calculations of all above topics). Definitions of Electrical quantities: Voltage, current, resistance, power and energy – units of these quantities. Fundamentals of Alternating Current (AC): Definition of AC terms- wave form – Instantaneous value, Maximum value, Root Mean Square (RMS) value – Cycle, frequency, power and power factor- Disadvantages of low power factor, Methods to improve power factor – Three phase connections -Advantages – Star and Delta connection – properties of Star and delta connections. Fundamentals of Electrical Machines: Brief concepts of Electrical motors and Generators. Induction Motors-	14

	Principle of working of Three phase induction motors – types of induction motors - Necessity of starter- Working of Variable Frequency Drives (VFD) - Servo motor – definition – uses. Transformers-types of transformers Principle and working of single-phase transformer (Basic idea only, No calculations)	
IV	**Basics of Electronics Engineering** (Brief study only – No derivations or Calculations involved) Basic Concepts: Definition of conductors, Insulators and semiconductors. Semiconductor Devices: Brief study – Doping of semiconductors – types of semiconductors – PN Junction Diode working – Transistors working. Rectifiers – Types – Working of Half wave, Full wave and Bridge Rectifiers. Transducers: Function of Transistors – Types – Advantages of Transducers– Piezo electric effect - Working principle of strain gauge – Working principle of Photocell – Applications of strain gauge and photocell in Textile Industries.	14
V	**Measuring Instruments and Sensors** (Brief study only – No derivations or Calculations involved) Sensors: Introduction – functions of Sensors – Types of sensors – Applications of sensors – Definition of Temperature, Pressure, Level, Force, Humidity, Infrared sensor and Proximity sensors – working of Proximity sensor – Limit switch. Earthing: Importance of Earthing – Methods of earthing – Explanation of Pipe earthing. Measuring Instruments: Instruments used to measure Voltage, Current, Power and Energy – Working of Energy meter (Induction type).	15

TEXT BOOKS

S.No	Title	Authors	Publisher	Year
1	Thermal Engineering	R.Rudramoorthy	Tata Megraw Hills Educational pvt Ltd. New delhi	2010
2	A Text Book on Hydraulics,Fluid Mechanics and Hydraulic machines	R.S.Khurmi	S.Chand& Co, Ram nager New Delhi-110055	1981

REFERENCE BOOKS

S.No	Title	Authors	Publisher	Year
1	Thermal Engineering	R.Rudramoorthy	Tata Megraw Hills Educational pvt Ltd. New delhi	2010
2	A Text Book on Hydraulics,Fluid Mechanics and Hydraulic machines	R.S.Khurmi	S.Chand& Co, Ram nager New Delhi-110055	1981
3	Mechanical Technology	V.Sivarajan	V.K.Publishers	
4	Welding and Welding Technology	Richard. L. Little	Tata Megraw Hills Pub.co.Ltd.,	2005
5	A Text Book of Electrical Technology	B.L.Theraja	Publication Division,Niraja, New Delhi	2005
6	Electronic Principles	Malvino	Tata McGraw Hill Publication	2010
7	Electrical Machines	Smarajit Ghosh	Person Education (Singapore) P.Ltd., Indian Branch - 482, FIE. Patparaganj .Delhi-110 092	2005

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 – 2021 onwards

YARN MANUFACTURE II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060420

Semester : IV Semester

Subject Title : YARN MANUFACTURE -II

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
YARN MANUFACTURE - II	5 Hrs	80Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 Marks.**

Topics and Allocation of Hours

UNIT	TOPIC	HOURS
I	**COMBER**	15
II	**SPEED FRAME**	15
III	**RING FRAME**	15
IV	**MODERN RING FRAME**	14
V	**DOUBLING, REELING, BUNDLING AND BALING**	14
Test & Model Exam		7
Total		**80**

RATIONALE

The basic idea about Comber, Speed Frame, Ring Frame and the working of the various components of the spinning process. The students will be able to understand the Objectives, principles and Modern developments in Comber and Speed Frame, principles of doubling and drafting in Comber and other functional components. This will enable the students to perform the necessary setting changes required for processing different counts and do calculations related with the production

and efficiency of the machines, draft applied etc.

Objectives

- To know about the combing process, preparatory machines to comber and its working.
- To know about the combing cycles, setting between top comb to Nipper and
- Nipper to Unicomb.
- To understand the salient features of modern comber.
- To understand the passage of material through speed frame and its working.
- To know the Objectives and working of building mechanisms and differential motions in fly frame.
- To know about the working of ring frame.
- To understand the Different types of Top Arm drafting systems.
- To acquire knowledge of the Building Motion.
- To know about the special attachments like auto doffing.
- To know about the compact spinning system.
- To know the salient features of modern Ring frame.
- To learn the methods of Dry and Wet doubling machine.
- To study the Plain Reel and Cross Reel with 7 Lea Motion.
- To get knowledge in Bundling and Baling process.

4060420 - YARN MANUFACTURE – II

DETAILED SYLLABUS

Contents : Theory

Unit	Name of the Topic	Hours
I	**COMBER** Preparatory process for Combing - Objectives - Different process sequences in the combing preparation. Brief of comber preparatory machines – Sliver lap, Ribbon lap and Pre comber drawing, lap former machines. Material passage through Lapformer. Comber – Objectives, Degree of combing, Passage of material, working of the Comber and Combing cycle. Determination of noil percentage and characteristics of combed yarn. Comber settings - Nipper to detaching rollers - nipper to cylinder and top comb. Salient features of modern comber. Defects in combing - their causes and remedies Popular machine manufacturers. Calculation pertaining to comber production, combing fractionating Index.	15
II	**SPEED FRAME** Speed Frame – Objectives - Passage of material through the Speed Frame. Functions of different parts of the speed Frame. Roller setting and its importance. Study of 3 over 3 and 4 over 4 drafting system. Spring and pneumatic top arms : SKF and Texparts. Principles of winding – Flyer lead and bobbin lead. Functions of the cone drums and differential motion. Objectives and brief study of builder mechanism. Brief study of servo drives in speed frame. Salient features of modern speed frames. Defects in speed frame roving - causes and remedies. Monitoring device – sliver and roving stop motion - Calculations pertaining to draft, twist and production.	15

III	**RING FRAME** Ring Frame - Objectives and passage of material through the Ring frame. Functions of different parts of the Ring Frame. Traverse motion for roving feed and its importance. Functions of drafting rollers, aprons, cots, and spacers. Study of top arm drafting systems - SKF, SUSSEN and Lakshmi High Drafting systems. Brief study of different types of rings and travellers and high speed spindles. Study of winding and binding coils and spindle driving systems. Study of working of building motion - cop builds, ring rail movement,. Running-in procedure for new Rings. Roller stands inclination and its effect on spinning tension. Calculations pertaining to draft, twist and production.	15
IV	**MODERN RING FRAME** Salient features of modern Ring Frames. Special attachments such as Individual spindle monitoring, Rovo stop, auto doffing, Link Coner. Brief study of Pneumafil and balloon control rings. Study of compact spinning system. Methods of driving – study of inverter drives used in Ring Frames. Common defects in ring spun yarns, causes and remedies. Causes of end breakages in ring frame. Brief study of twist factor and its effect on yarn quality. Study of twist, strength and count relationship. Twist factors adopted for different end uses of yarn such as warp, weft, hosiery and high twist yarns. Study of changes made in ring frame during count change. Brief study of Spinning mill control system and related App.	14
V	**DOUBLING, REELING, BUNDLING AND BALING** Doubling - Objectives and methods of doubling. Brief study of wet & dry doubling machine. Yarn conditioning process. Direction of twist in doubled yarn and its relation to single yarn. Balancing of twist in doubled yarn. Calculation of resultant counts. Study of Doubler winder, Passage of material through Doubler winder. Working and salient features of Two-for-one-Twister. Reeling: Objectives, types- straight and cross reeling,	14

	Study of working of 7 lea and cross lea motion. Study of doffing mechanism. Bundling, Baling and Packing: Objectives of bundling and baling. Need for bundling weight correction and its importance. HDPE bag and pallet packing, packing identification lables. Checking procedures for EOU. Brief study of slub yarn, elitwist and mélange yarn	

TEXT BOOKS:

S.No	Titile	Authors	Publisher	Year
1	Cotton spinners Hand book	Jaganathan.R	Mahajan Brotheres Ahmedabad 380009	1976
2	Cotton waste industry	Srinivasamoorthy.H.V	Victoria Jubilee Technical Institute,Matunga, Bombay 400019	1976

REFERENCE BOOKS:

S.No	Titile	Authors	Publisher	Year
1	Manual of cotton spinning volume IV & V	Hanter.W.A	Textile Institute Manchester	1964
2	Cotton spinning	Taggart.W.S	S.S.Shroff	1979
3	Cotton ring spinning	MerrillG.R	Gilbert R-Menill 364 Varnam Ave-Lowell Man	1959
4	A practical guide to Ring spinning	Klein.W	The Textile Institute UK	1987
5	Rieter manual of spinning , Volume 1 , 2,3,4	W. Klein	Rieter machine works ltd, Wintherthur	2016

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 – 2021 onwards

FABRIC MANUFACTURE - II

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name **:** 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code **:** 4060430

Semester **:** IV Semester

Subject Title **:** FABRIC MANUFACTURE- II

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Fabric Manufacture – II	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

TOPICS AND ALLOCATION OF HOURS

UNIT	TOPIC	HOURS
I	DOBBY SHEDDING	15
II	JACQUARD SHEDDING	15
III	MULTIPLE BOX MOTION AND TERRY WEAVING	15
IV	AUTOMATIC WEAVING	14
V	WEAVING OF SYNTHETIC TEXTILES & LOOM CALCULATIONS	14
TEST & REVISION		07
	Total	80

RATIONALE

This subject deals about the special mechanisms of power loom such as dobby, jacquard, box motion and terry motion. The students will study about the automatic shuttle looms, synthetic and blended yarn weaving. After studying this subject the student will be able to calculate the production of looms, balancing of machineries and fabric costing in a weaving factory.

OBJECTIVES

- To know about various types of Dobby mechanism
- To know about various types of Jacquard mechanisms
- To study about multiple box motion & Terry motion
- To study about Automatic looms, their advantages and the mechanisms available
- To have knowledge about Synthetic and blended yarn weaving
- To study loom calculations, costing and balancing of machineries

4060430 - FABRIC MANUFACTURE - II

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Dobby Shedding** Objectives and Classification. Types of dobby – Single lift and Double lift – Characteristics comparison between Single lift and Double lift dobbies. - Positive and Negative dobbies. Right hand and Left hand dobbies. Working of Climax dobby. Pegging for a design. Jack missing – Definition and Causes. Pick finding devices. Cam Dobby – Types - Working of Negative Cam dobby. Study Electronic dobby – manufacturers – working principle of electronic dobby.	15
II	**Jacquard Shedding** Objectives - Types of Jacquards. Principle of Jacquard shedding. Size of a Jacquard machine. Working of Double Lift Double Cylinder Jacquard with Timing and Setting. Advantages and Disadvantages of Double Lift Double Cylinder Jacquard. Jacquard harness mounting - Norwich and London systems and its comparison. Design ties - Types and Casting out. Study of Electronic Jacquards- types and manufacturers – Working principle – Advantages of electronic jacquards.	15
III	**Multiple Box Motion and Terry Weaving** Multiple Box Motion: Object – classification. Working of 2 x 1 drop box motion. Working of Eccle's drop box motion. Preparation of pattern chain for 4 x 1 drop box motion with and without card saving device. Brief study of Pick-at-will motion. Brief study of box safety device and setting up of drop box motion. Terry weaving: - Object - Principles of terry weaving - Working of loose reed terry motion - adjustment of pile length - fringing motion.	15

IV	Automatic Weaving Automatic Looms – Features - Advantages and Classification. Optical Weft stop motion Objectives – working principle . Warp stop motion – Object and working of mechanical and electrical Warp stop motions. Working of weft replenishment mechanism. Study of Weft feeler mechanism – mechanical, electrical and optical types. Working of self threading shuttle. Working of Positive warp let-off motion. Comparison of Fabric quality in plain power loom and Auto loom. Fabric defects – Causes and Remedies.	14
V	**Weaving of Synthetic Textiles and Loom Calculations** Loom requirements to weave synthetic and blended spun yarns and filament yarns. Common Synthetic Fabric Defects and its remedies. Finding the speed of power looms, Production calculation of a power loom for two particular sorts, Calculating the Efficiency of loom. Weft yarn requirement calculations, Balancing of machineries in a weaving factory having 200 looms capacity. Calculation of the Ex-Mill price of fabric per meter.	14

REFERENCE BOOKS

S.No	Title	Author	Publisher	Year of Publishing
1	Modern Preparation and Weaving	A.Ormerod	Wood Head Publishing Ltd, London	1983
2	Principles of Weaving	Marks & Robinson (ATC)	The Textile Institute, Manchester.	1976
3	Weaving Calculations	R.Sengupta	D.B.Taraporevala sons & co Ltd., Mumbai	1996

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 – 2021 onwards

FABRIC STRUCTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : **4060440**

Semester : IV Semester

Subject Title : **FABRIC STRUCTURE**

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FABRIC STRUCTURE	5 Hrs	80 Hrs	25	100	100	3 Hrs

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

TOPICS AND ALLOCATION OF HOURS

UNIT	TOPIC	HOURS
I	PLAIN, TWILL AND SATIN SATEEN WEAVES	15
II	CREPE, HONEYCOMB & HUCK-A-BACK WEAVES	15
III	MOCK–LENO, BEDFORDCORD WELTS AND PIQUES	15
IV	WARP AND WEFT PILE & LENO STRUCTURES	14
V	EXTRA WARP/WEFT FIGURING, BACKED AND DOUBLE CLOTHS	14
Test & Model Exam		7
Total		80

RATIONALE

The fundamental concepts of woven fabric structures will be taught to the students. After studying this subject student will be able to analyze various fabrics for the design, draft and peg plan.

OBJECTIVES

- To know about the basic principles of construction of primary weaves.
- To know about the basic construction of crepe, honeycomb & huck-a-back structures.
- To know about the basic construction of mock leno, Bedford cord, pique weaves.
- To know about the basic construction of advanced fabric structures like extra warp/weft figuring, backed and double cloths

4060440 - FABRIC STRUCTURE

DETAILED SYLLABUS

Unit	Name of the Topics	Hours
I	**PLAIN, TWILL, SATIN AND SATEEN WEAVES** Methods of weave representation – repeat unit – construction of draft and peg plans from given design - construction of draft from design and peg plans - construction of designs from given draft and peg plans - types of drafting – denting – plain and its derivatives – characteristics and uses. Twill and its derivatives – characteristics and uses. Sateen and satin weaves - its characteristics – regular and irregular sateen and satins- uses of sateen weaves	15
II	**CREPE, HONEYCOMB & HUCK-A-BACK WEAVES** Crepe weaves - characteristics - construction of crepe weaves upon sateen bases, combinations of floating weave with plain threads, crepe weaves produced by reversing, insertion of one weave over another – uses of crepe weaves. Honey comb weaves - its characteristics, ordinary and brighten honey comb weaves - uses of honey comb weaves Huck-a-back weaves - Characteristics and uses	15
III	**MOCK–LENO, BEDFORDCORD WELTS AND PIQUES** Mock-leno weaves – perforated fabrics - Characteristics and uses Bedford cord – plain faced and twill faced bedford cords – Uses Welts and Piques - classifications of the structures – ordinary wadded welts – piques - loose back piques - fast back piques - method of designing - four pick fast back pique structures.	15
IV	**WARP AND WEFT PILE & LENO STRUCTURES** Terry pile structures - formation of the piles characteristics – uses – 3 pick and 4 pick terry – terry ornamentation - stripe and check dobby designs. Velvets and velveteens – all over and continuous pile structures – fast pile structures , corded velveteens– characteristics and end uses. Leno structure - the principle of leno structure- formation of basic sheds in leno weaving - leno weaving with flat steel doup with an eye – design, draft	14

	and lifting plan for leno weave.	
V	**EXTRA WARP/WEFT FIGURING, BACKED AND DOUBLE CLOTHS** Figuring with extra warp and extra weft threads – development of motif in different combinations - uses Backed cloths – definition - constructing backed cloths - weft backed cloths and warp backed cloths using standard weaves –wadded backed cloths Double cloths – definition – types and classification - construction of self stitched double cloths Treble cloth – definition – construction of self stitched treble cloth	14

REFERENCE BOOKS

S.No	Titile	Authors	Publisher	Year
1	Watson's Textile Design & Colour,	Z.Crosiciki	Universal Publishing Corporation, Newnes, Butterworths, England	1988
2	Structural Fabric Design	James W. Klibbe	North Carolina State University Printshop	1965
3	Woven Cloth Construction	ATC Robinson R. Mark	Textile Institute, Manchester	1973

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 – 2021 onwards

YARN MANUFACTURE - II PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060450

Semester : IV Semester

Subject Title : YARN MANUFACTURE – II PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
YARN MANUFACTURE – II PRACTICAL	4 Hrs	64Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

RATIONALE:

In Diploma level Engineering education skill development plays a vital role. The skill development can be achieved by on hand experience in various instruments, apparatus and equipment. This is accomplished by doing engineering related experiments in practical classes in various laboratories.

OBJECTIVES

COMBER

- To calculate the speed, production and efficiency of the Comber.

SPEED FRAME

- To practice the various settings of the Speed frame
- To calculate the Draft, Twist and the machine constants of the Speed frame.
- To calculate the speed, production and efficiency of the Speed frame.
- To calculate the coils per inch and the lay constant of the Speed frame.
- To study the working of the builder mechanisms of the Speed frame and set the same for proper working.

RING FRAME

- To practice the various settings of the Ring frame
- To calculate the Draft, Twist and the machine constants of the Ring frame.
- To calculate the speed, production and efficiency of the Ring frame.
- To study the working of the builder mechanisms of the Ring frame and set the same for proper working.
- To practice spindle and lappet gauging in the Ring frame.

DOUBLING FRAME

- To practice the various settings of the Doubling frame
- To calculate the Twist and the machine constants of the Doubling frame.
- To calculate the speed, production and efficiency of the Doubling frame.
- To study the working of the builder mechanisms of the Doubling frame and set the same for proper working.
- To practice changing the twist direction in the Doubling frame.
- To practice spindle and lappet gauging in the Doubling frame.

REELING MACHINE

- To calculate the speed, production and efficiency of the Reeling Machine.
- To study the working of the 7 lea mechanism of the Reeling Machine.
- To study the working of the doffing mechanism of the Reeling Machine.

GUIDELINES

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

LIST OF EXPERIMENTS

1. Estimation of the speeds of various parts of comber based on the given gearing diagram.
2. Estimation of the intermediate draft, total draft and draft constant of the Speed frame/based on given gearing diagram.
3. Estimation of twist per inch and twist constant of the Speed frame and calculation of the production per spindle per shift of 8 hrs for the present wheels on the machine. Assume the value for Twist Multiplier (T.M) and hank fed.
4. Estimation of the coils per inch and lay constant of the speed frame for the present wheels/based on given gearing diagram.
5. Estimation of the total draft, intermediate drafts and draft constant of the Ring frame for the present wheels on the machine/based on given gearing diagram.
6. Estimation of twist per inch and twist constant in the given Ring (or) Doubling frame and calculation of the production per spindle per shift of A hrs at B% efficiency, when the value of Twist Multiplier (T.M) is C and the hank fed is D for the present wheels on the machine.
7. Setting the Spindle and lappet gauging for 4 spindles on any one side of the Ring (or) Doubling frame.
8. Estimation of specifications of ring, traveller and cop content based on the given sample.
9. Calculation of the traveller speed in meter per second and traveller lag at the full and bare bobbin and estimation of the variation in twist in Ring (or) Doubling frame for the present wheels on the machine.
10. Changing of the direction of twist in Ring (or) Doubling frame.
11. Working of Building mechanism of the Ring (or) Doubling frame.
12. Working of the Reeling machine with 7 lea and cross lea mechanisms

LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS

Comber, Speed frame, Ring frame, Doubling frame and Reeling machines

Material :- Cans of carding sliver, Sliver laps, Ribbon laps, Roving bobbins and Ring Cops.

1. Speed frame – 1
2. Ring frame – 1 (or) Doubling frame – 1
3. Reeling Machine – 1

SPECIFIC INSTRUCTIONS TO CARRY OUT IN THE PRACTICAL CLASS WORK AS WELL AS THE BOARD PRACTICAL EXAMINATIONS

The students are instructed

1. To do the activities which are pertaining only to the specific experiments they are doing
2. To maintain their work place clean and tidy
3. To handle the tools and other gauges properly and with due care.
4. Not to wander from place to place unnecessarily
5. Not to talk with other students unnecessarily
6. To get their observation notes signed by the staff in charge immediately on completing the experiment
7. To complete their record notes and gets it signed by the staff in charge when they come to the next practical class.
8. Not to indulge in any malpractice

SAFETY PRECAUTIONS TO BE FOLLOWED

The students while doing the experiments,

1. Should wear safe foot wear, preferably shoes.
2. Should keep their shirts tucked in.
3. Should do settings on the machines only after the mains supply is switched off.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machine without doing regular safety checks and closing the safety doors.

MODEL QUESTION PAPER

1. Estimate the speeds of various parts of comber based on the given gearing diagram.
2. Estimate the intermediate draft, total draft and draft constant of the Speed frame/based on given gearing diagram.
3. Estimate the twist per inch and twist constant of the Speed frame and calculate the production per spindle per shift of 8 hrs for the present wheels on the machine. Assume the value for Twist Multiplier (T.M) and hank fed.
4. Estimate the coils per inch and lay constant of the speed frame for the present wheels/based on given gearing diagram.
5. Estimate the total draft, intermediate drafts and draft constant of the Ring frame for the present wheels on the machine/based on given gearing diagram.
6. Estimate the twist per inch and twist constant in the given Ring (or) Doubling frame and calculate the production per spindle per shift of A hrs at B% efficiency, when the value of Twist Multiplier (T.M) is C and the hank fed is D for the present wheels on the machine.
7. Set the Spindle and lappet gauging for 4 spindles on any one side of the Ring (or) Doubling frame.
8. Estimate the of specifications of ring, traveller and cop content based on the given sample.
9. Calculate the traveller speed in meter per second and traveller lag at the full and bare bobbin and estimate the variation in twist in Ring (or) Doubling frame for the present wheels on the machine.
10. Change the direction of twist in Ring (or) Doubling frame.
11. Explain with neat sketch the working of the Building mechanism of the Ring (or) Doubling frame.
12. Explain with neat sketch the working of the Reeling machine with 7 lea and cross lea mechanisms.

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DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 – 2021 onwards

FABRIC MANUFACTURE II PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name **:** 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code **:** 4060460

Semester **:** IV Semester

Subject Title **:** FABRIC MANUFACTURE – II PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Fabric Manufacture – II Practical	4	64	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

To enhance practical knowledge about the dobby, jacquard, drop box and terry mechanisms students will get hands on training by studying each mechanism individually. And also, the mechanisms of automatic shuttle looms like positive let-off, cop changing, warp stop motion will be dismantled and assembled during the practical.

OBJECTIVES

Dobby

- To study the various parts of the Dobby mechanism.
- To set the dobby for correct working with timing and setting.
- To peg the lattice for LH dobby for the given weaves
- To peg the lattice for RH dobby for the given weaves

Drop box

- To study the various parts of the Drop box mechanism for correct working with timing and setting.

- To prepare a chain of metallic cards for weaving a given pattern without card saving device in a drop box loom.
- To prepare a chain of metallic cards for weaving a given pattern with card saving device in a drop box loom

Jacquard

- To draw the diagram of a jacquard and to understand the working of a Jacquard mechanism with functions of various parts.
- To draw the timing diagram of a jacquard for various actions.

Automatic loom

- To Dismantle and assemble the various mechanisms of the automatic loom with timing and settings.

4060460 - FABRIC MANUFACTURE – II PRACTICAL

LIST OF EXPERIMENTS

1. Setting the Dobby mechanism for correct working with timing.
2. Pegging the lattice for LH dobby for the given weaves: Honey Comb and Mock Leno.
3. Pegging the lattice for RH dobby for the given weaves: Huck-a-back and Herring Bone Twill
4. Setting the Drop box mechanism for correct working with timing.
5. Preparation of a chain of metallic cards for weaving a given pattern without card saving device in a drop box loom.
6. Preparation of a chain of metallic cards for weaving a given pattern with card saving device in a drop box loom.
7. Sketching the Jacquard mechanism with timing diagram for correct working
8. Sketching the Terry mechanism & setting for correct working with timing.
9. Setting the Mechanical weft feeler in cop changing mechanism for correct working with timing
10. Setting the Cop changing mechanism for correct working with timing.
11. Setting the Warp stop motion for correct working with timing.
12. Setting the Positive let-off motion for correct working with timing.

LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS

Dobby loom	- 1 no
Jacquard loom	- 1 no
Terry loom	- 1 no
Drop box loom	- 1 no
Automatic loom	- 1 no

BOARD EXAMINATION

GUIDELINES

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills every student should be provided with a separate Weaving machine for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

4060460 - FABRIC MANUFACTURE – II PRACTICAL

MODEL QUESTION PAPER

1. Set the Dobby mechanism for correct working with timing.
2. Peg the lattice for LH dobby for the given weaves: Honey Comb and Mock Leno.
3. Peg the lattice for RH dobby for the given weaves: Huck-a-back and Herring Bone Twill
4. Set the Drop box mechanism for correct working with timing.
5. Prepare of a chain of metallic cards for weaving a given pattern without card saving device in a drop box loom.
6. Prepare of a chain of metallic cards for weaving a given pattern with card saving device in a drop box loom.
7. Sketch the Jacquard mechanism with timing diagram for correct working
8. Sketch the Terry mechanism & setting for correct working with timing.
9. Set the Mechanical weft feeler in cop changing mechanism for correct working with timing
10. Set the Cop changing mechanism for correct working with timing.
11. Set the Warp stop motion for correct working with timing.
12. Set the Positive let-off motion for correct working with timing.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

II YEAR

N- SCHEME

IV SEMESTER

2020 - 2021 onwards

FABRIC STRUCTURE PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING,TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060470

Semester : IV Semester

Subject Title : FABRIC STRUCTURE PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FABRIC STRUCTURE PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

To enhance the practical knowledge to analyse the sample of cloth, this fundamental, help the students to acquire knowledge about the design, draft and peg plan loom requirement to weave the cloth.

OBJECTIVES

Woven fabric analysis

To identify warp and weft threads, selvedge, weaving method and machine to produce the fabric.

To analyze the given fabric and find out design, draft and peg plan.

Woven fabric quality particulars

To find out the particulars like Ends and picks per unit length, Count of warp and weft, crimp percentage.

Fabric costing

With the above particulars the student has to do fabric costing by suitable formulae explained to them during practical.

GUIDELINES

- All the 12 cloth samples given in the list of experiments should be completed and given
- for the end semester practical examination.
- In order to develop best skills every student should be provided with a separate fabric sample of suitable size.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment / Design Work	60
Write up	30
Viva - Vice	10
Total	100

LIST OF EXPERIMENTS

1. Analysis of a given plain weave Grey cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
2. Analysis of a given plain weave Poplin cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
3. Analysis of a given plain weave Voile cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
4. Analysis of a given Striped cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
5. Analysis of a given Checked cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
6. Analysis of a given Mat weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
7. Analysis of a given Herring bone twill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
8. Analysis of a given Left / Right hand twill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric
9. Analysis of a given Drill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
10. Analysis of a given satin weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
11. Analysis of a given sateen weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
12. Analysis of a given crepe weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.

List of equipment required for a batch of 30 students

Equipment required **:** Beesley`s Balance 1 no

Materials required **:** 2 Meters of each samples for a batch of 30 students.

SAFETY PRECAUTIONS TO BE FOLLOWED

The students while doing the experiments,

1. Should wear safe foot wear, preferably shoes.
2. Should keep their shirts tucked in.

MODEL QUESTION PAPER

1. Analyze the given plain weave Grey cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
2. Analyze the given plain weave Poplin cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
3. Analyze the given plain weave Voile cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
4. Analyze the given Striped cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
5. Analyze the given Checked cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
6. Analyze the given Mat weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
7. Analyze the given Herring bone twill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
8. Analyze the given Left / Right hand twill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric
9. Analyze the given Drill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
10. Analyze the given satin weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
11. Analyze the given sateen weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
12. Analyze the given crepe weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.

V SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

TEXTILE TESTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060510

Semester : V Semester

Subject Title : TEXTILE TESTING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE TESTING	5 Hrs	80Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	MOISTURE AND ITS RELATIONS IN TEXTILES	15
II	FIBRE TESTING	15
III	YARN TESTING:	15
IV	FABRIC TESTING:	14
V	STATISTICAL QUALITY CONTROL	14
	TEST & REVISION	07
Total		80

RATIONALE

This subject deals about moisture and its relations in textiles, fibre testing, yarn testing, fabric testing and statical quality control. After studying this subject, student will be able to understand the principles & working of testing instruments.

OBJECTIVES

- To know the relationship of moisture with textile and related terms & definitions.
- To understand the principle and the methods of determining the moisture in the atmosphere and the textile materials.
- To know the properties and their importance of fibre this is the raw material for all the textile goods.
- To understand the principles and the methods of testing the fibres to determine their basic characteristics.
- To know the properties and the importance of the yarn.
- To understand the principles and the methods of testing the yarn to determine its properties
- To know the quality characteristics of the fabric required for different end uses.
- To study the principles and the methods of testing the fabric to determine their quality characteristics.
- To study the statistical methods involved in controlling the quality of the textile products during their manufacture
- To learn about the application of the statistical methods to suit textile processes.

4060510 - TEXTILE TESTING

DETAILED SYLLABUS

Content: Theory

Unit	Name of the Topic	Hours
I	**MOISTURE AND ITS RELATIONS IN TEXTILES** Humidity and its importance in Textiles - Definitions of Absolute Humidity, Relative Humidity, Standard Testing atmospheric condition, Measurement of Humidity - Wet and dry bulb Hygrometer, Definition of Moisture content, Moisture regain - Estimation of moisture content and regain using Conditioning oven and Shirley Moisture meter, Standard regain – Definition - standard regain values of cotton, viscose, silk, wool, nylon, polyester, tencel, linen and bamboo - Effect of moisture regain on fibre properties. Factors affecting moisture regain.	15
II	**FIBRE TESTING** Length – Importance of fibre length - Definition of effective length and span length - Methods of measuring fibre length by Digital Fibro graph. Fibre fineness - Importance of fibre fineness - Methods of measuring fibre fineness by Sheffield micronaire instrument. Fibre maturity – Importance, measurement of fibre maturity by sodium hydroxide swelling method - Maturity ratio and Maturity coefficient. Fibre strength - Importance and method of measuring fibre strength by Stelometer . Estimation of trash content by Shirley Trash Analyser. Fibre Quality Index – Principles of measurement of Fibre properties in High volume instrument, Brief Idea about Advanced Fibre Information System (AFIS).	15

III	**YARN TESTING** Yarn count – Determination of yarn count by Auto sorter and Beesley balance - Importance of CSP and RKM - Importance of Twist - Estimation of yarn twist by Electronic Twist Tester – single yarn, doubled yarn. Importance of yarn strength - Principle of working of yarn strength testers – CRE,CRL and CRT - Working of single yarn strength tester of pendulum lever type, lea strength tester and principle of Instron tester. Yarn irregularities – thick, thin, slub, nep - Methods of Assessing yarn evenness by yarn -appearance board and Uster Evenness Tester 4 - Brief study of Uster classimate, Yarn Hariness Index – Definition. Comparision between Online and Offline Testing of Yarn.	15
IV	**FABRIC TESTING** Crimp-Definition, Importance – Shirley crimp tester. Study of Shirley stiffness tester and Shirley crease recovery tester. Definition of fabric handle, serviceability, abrasion, pilling and drape. Importance of fabric tensile strength, tearing strength and bursting strength. Study of fabric tensile strength tester. Definition of Fabric Air Permeability and Fabric Air Resistance, Kawabata – Objective measurement of Subjective Properties.	14
5	**STATISTICAL QUALITY CONTROL** Classification and Tabulation of Data - Frequency Diagram – Histogram and frequency polygon. Measures of Central tendency - Mean, Median, Mode. Simple Calculation of Mean, Median, Mode. Measures of dispersion - Mean Deviation, Percent Mean Deviation, Standard Deviation and Co-efficient of variation. Simple calculation of MD,PMD,SD & CV. Normal distribution curve, Variance Length Curve and its properties. Quality Control Chart - Definition, use, Construction of control chart for Averages and Ranges, Six Sigma Concept.	14

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TEXT BOOKS

S.No	Titile	Authors	Publisher	Year
1	Hand Book of Textile Testing and quality Control	E.B.Groover and D.S.Hamby	Mohinder Singh Sejwal (for Wiley Eastern Ltd New Delhi,India	1960
2	Hand Book of Methods of Test for Cotton Fibers Yarn and Fabrics	V.Sundaram and R.L.N.Iyengar	CTRL.,Mumbai	1988
3	ISI Hand book of Textile Testing		Indian Standard Institution, New Delhi, India	1982

REFERENCE BOOKS

S.No	Titile	Authors	Publisher	Year
1	Principles of Textile Testing	J.E.BOOTH	Butterworth Scientific London	1996
2	The Characteristics of Raw Cotton Vol II Part-I in the series manual of Cotton Spining	E.Lord	The Textile Institute and Butterworth,England	1961
3	Methods of Test for Textiles – B.S.Hand book No.11,	B.S.I	British Standards Institution,London, England	1963
4	Method of Test for Textiles BS Hand book NO 11,	B.S.I	British Standards Institution,London, England	1963
5	Statistical methods	Gupta	S.Chand & Co,.New Delhi	1983
6	An Outline of statistical methods for use in the Textile Industry	A.Brearley & D.R.Cox	WIRA, LEEDS,U.K.	1974
7	Theory and problems of Statistics	M.R.Spiegel	McGraw Hill, International Book company Newyork,London	1972

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

TEXTILE WET PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060520
Semester	:	V Semester
Subject Title	:	TEXTILE WET PROCESSING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE WET PROCESSING	5 Hrs	80Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	Preparatory and Bleaching Process	15
II	Dyeing Process	15
III	Printing Process	15
IV	Finishing Process	14
V	Quality and pollution Control	14
	TEST & REVISION	07
Total		80

RATIONALE

To enhance knowledge in processing concepts, this subject is introduced.

To understand the preparatory process in processing, a well detailed syllabus is given.

To improve the knowledge in dying, printing, finishing, quality & pollution control topics are included.

Objectives

- To understand the Preparatory process of Textiles
- To learn about Process of Bleaching.
- To learn different types of Dyes and applications
- To learn about varies processing machineries.
- To understand the types of Printing and Techniques
- To know about the screen preparation
- To know about different Textile finishes and Application
- To learn about special finishes and advantages
- To understand the Quality control methods in Wet Processing.
- To understand the Eco- friendly Processing& Effluent Treatment process

4060520 - TEXTILE WET PROCESSING

DETAILED SYLLABUS

Content: Theory

Unit	Name of the Topic	Hours
I	**Preparatory and Bleaching Process** Sequence of wet processing treatments for Yarn, Woven and Knitted with objectives of each treatment - Singeing - Gas Singeing Machine for woven fabric with line diagram - Desizing – Continuous Enzyme desizing method and its merits - Scouring - Mechanism of scouring - Process of caustic scouring using high pressure kier. Bleaching – Hydrogen Peroxide Bleaching- Continuous scouring and bleaching using Continuous Bleaching Range (CBR) –Optical Brightening Agent treatment	15
II	**Dyeing Process** Definition of dyeing - Classification of dyes based on their mode of application - Dyeing of cotton with Reactive dyes and vat dyes - Dyeing of wool with acid dyes - Dyeing of silk with basic dyes - Dyeing of Polyester with Disperse dyes – salt free dyeing using pad batch method - Dyeing machines - Working of jigger Soft flow jet dyeing machine, Air flow jet dyeing machine - HTHP Beam dyeing machine, cheese dyeing machine. Garment dyeing – Advantage and disadvantage – Working of drum type Garment dyeing machine	15
III	**Printing Process** Definition and objective of printing - Comparison between dyeing and printing –Styles and methods of printing - Definition and functions of Ingredients of printing paste. Direct style of printing with pigments on cotton - Direct style of printing with reactive dyes on cotton - Direct style of printing with Disperse dyes on polyester - Screen preparation - Flat bed screen printing machine - Rotary screen printing machine - curing machine -steamer	15

IV	**Finishing Process** Purpose of finishing - Stiff finishing of cotton fabric with Starch, Polyvinyl Acetate –Types of softeners and their properties - wrinkle free finish-Sanforizing – Mercerisation – Hank and fabric mercerization - Advantages – Chainless mercerising machine - calendering - Hot air stenters Anti-crease finish with DMDHEU Resin - Brief study on antimicrobial finish- Anti viral finish - UV protective finish - water repellent finish - Flame retardant finish (Only objectives and recipe)	14
V	**Quality and pollution Control** Importance of Quality Control –Different Fastness Tests for dyed and printed materials - Determination of wash fastness - Wet and Dry rubbing fastness- Shrinkage test – Computer Colour Matching - Objectives & Limitations – Importance and need of environment protection - Air, water and noise pollution. Brief study on Effluent Treatment Process flow chart only. Brief study on eco-friendly processing - List of banned chemicals and alternatives.	14

TEXT BOOKS

S.No	Titile	Authors	Publisher	Year
1	Technology of Textile Processing Vol.3 Technology of Bleaching	Shenai V.A.	Shevak Publications 306 Shri Hanuman Industrial Estate Gousmbekar Road,Wadala Mumbai – 37	1981
2	Technology of Textile Processing, Vol.2 Chemistry of dyes & Principles of dyeing	Shenai V.A.	Shevak Publications 306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala, Mumbai - 37	1983
3	Technology of Textile Processing, Vol.6 Technology of Dyeing	Shenai V.A.	Shevak Publications 306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala, Mumbai - 37	1980

REFERENCE BOOKS

S.No	Titile	Authors	Publisher	Year
1	Technology of Textile Processing, Vol.4 Technology of Printing	Shenai V.A.	Shevak Publications 306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala, Mumbai - 37	1979
2	Technology of Textile Processing, Vol. 10 Technology of Finishing	Shenai V.A.	Shevak Publications 306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala Mumbai – 37	1987
3	Textile Printing	Miles L.W.C.	Society of Dyers & Colourist Perlein House 82 Gratlan Road, Broard fard West Yarkshire, England	1981
4	An Introduction to Textile Finishing	Marsh J.T.	B.I.Publications 54 Janpath New Delhi 110 001	1982

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

ELECTIVE - I

ADVANCED TEXTILE MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060531
Semester	:	V Semester
Subject Title	:	ELECTIVE – I ADVANCED TEXTILE MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ADVANCED TEXTILE MANUFACTURE	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	TEXTURISATION	15
II	MODERN SPINNING	15
III	MODERN WEAVING	15
IV	NON – WOVENS	14
V	KNITTING TECHNOLOGY	14
	TEST & REVISION	07
Total		80

RATIONALE

To study the latest Texturisation process, Modern developments in spinning, Weaving, Knitting and non-woven's, and this subject is included in the scheme.

To enhance the knowledge in false twist texturing, non- woven manufacturing detailed syllabus is given.

To enhance the knowledge in Rotor spinning, Friction spinning, Warp knitting and Weft knitting detailed syllabus in projectile, rapier, jet, multiphase weaving is given.

Objectives

- To know about the various processes involved in Texturisation process.
- To have knowledge about Rotor spinning machine, DREF spinning.
- To know about various other systems of modern spinning and yarn properties.
- To know about the modern shuttle less weaving machines and multi-phase looms
- To know about different types of non-woven and their manufacturing methods.
- To know the applications of non-woven.
- To know about weft & warp knitting – working and uses.

4060531 - ADVANCED TEXTILE MANUFACTURE

DETAILED SYLLABUS

CONTENT : THEORY

Unit	Topic	Time
I	**TEXTURISATION** Texturisation - Definition– objectives – Classification - Type of Textured yarns – Properties of Textured yarns with their longitudinal view. Brief study of Texturing methods : false twist texturing – stuffer box texturing – edge crimping texturing – gear crimping texturing – knit de knit texturing – Air jet texturing – Advantages of textured yarns.	15
II	**MODERN SPINNING** Rotor spinning : Introduction – Basic principle, constructional details and working of the Rotor Spinning Machine – Detailed study of all the parts of Rotor Spinning machine – structure of rotor yarn – yarn characteristics: Strength, elongation, unevenness, hairiness and imperfections. Yarn faults and remedial measures – end uses. Friction Spinning: Principle of operation – yarn formation in - DREF 2 and - DREF 3 processes – Advantages and Disadvantages – raw material requirement and fibre characteristics for friction spinning. Airjet/Vortex Spinning – Working principle, Characteristics of air jet / Vortex yarn. Core and cover yarn spinning. Comparison of Ring, Rotor, DREF and Vortex yarns.	15
III	**MODERN WEAVING** Shuttleless weaving – Types of Shuttleless looms. Projectile weaving – Brief study of Projectile weaving machine, study of torsion bar picking mechanism and matched cam beat up mechanism. Rapier weaving – Principles of Rapier weaving (Dewas and Gaubler), principles of Rigid and flexible rapiers. Air Jet weaving – weft inserting mechanism. Weft accumulators – need and importance. Types of selvedges	15

	formed in Shuttleless weaving machines. Brief idea about multiphase weaving machines.	
IV	**NONWOVENS** Introduction – Definition – classification of different types of non woven – principles of dry laid, wet laid and spun laid web formation. Types of Web bonding: Brief study of Mechanical bonding: needle punching and spun lace. Thermal bonding: calendar bonding and through air bonding. Chemical bonding - saturation and spray techniques. Applications of nonwoven fabrics.	14
V	**KNITTING TECHNOLOGY** Weft knitting: Introduction- Classification – Properties of knitted fabrics: plain single jersey fabrics, rib fabrics, inter lock fabrics. Knitting elements: Cam, Sinker, Needles – latch, beard, compound needles (Parts and Function). Passage of material through single jersey weft knitting machine and Knitting action of latch needles. Warp knitting: Introduction, classification – definition of over lap & under lap. Knitting action of bearded needle in Tricot machine. Properties of warp knitted fabrics. Comparison of weft knitting and warp knitting. Common knitted fabric defects.	14

TEXT BOOKS:

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S.No	Title	Author	Publisher	YEAR
1	Practical Open-end Spinning	S- Haran Halli	Mahajan Publications Ahamadabad	1990
2	Norms for Spinning	D.Mohan raj	SITRA	2010

REFERENCE BOOKS:

S.No	Title	Author	Publisher	YEAR
1	Man-made Fibres	P.W.Moncrieff,	Newens Buttesworth London	1975
2	Textile Fibres Vol-I V.	A.Shenai	Sevak publication	1996
3	Modern Preparation and Weaving Machinery	A.Ormerod	Butterworth, London	1983
4	Process control in Spinning	Garde and Subramaniam	ATIRA	1978
5	Open-end Spinning	Rohlena etal	Elsevier scientific Publishing Co. Amsterdam New York	1976
6	Winding	BTRA	BTRA,Silver Jubilee Monograph Series	1981
7	Knitting Technology	David.J.Spencer	Acadamic publication	1982
8	An Introduction to weft knitting	A.Smirfitt	Merrow publication England	1975
9	An Introduction to warp knitting	Thomson	Merrow publication England	1971
10	Hand book of nonwovens	S.J.Russell	Woodhead Publishing Ltd, England	2007

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

ELECTIVE - I

TECHNICAL TEXTILES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060532
Semester	:	V Semester
Subject Title	:	ELECTIVE - I TECHNICAL TEXTILES

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ELECTIVE - I TECHNICAL TEXTILES	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	INTRODUCTION	15
II	MEDICAL TEXTILES	15
III	GEO TEXTILES	15
IV	FUNCTIONAL CLOTHING	14
V	TRANSPORTATION TEXTILES	14
	TEST & REVISION	07
Total		80

RATIONALE

To suit the present industrial need, this new subject is introduced. It is one of the versatile field for job opportunity.

To understand the basic concepts in Medical textiles, Geo textiles, Filtration, Agro, Sports and Transportation textiles are taught to the students.

OBJECTIVES

- To know about the Technical textiles and classification of technical textiles.
- To know about the Medical textiles and classification of medical textiles, characteristics of material used.
- To know about the geo textiles and function of geo textiles.
- To know about the functional clothing and classification of protective clothing.
- To know about the Transportation textiles. Fibre and yarns used in the Transportation textiles.

V Semester

ELECTIVE I - 4060532 - TECHNICAL TEXTILES

DETAILED SYLLABUS

Content: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION** Introduction to technical textiles – Definition – Difference between technical textiles and traditional textiles – classification of Technical textiles and applications (Industrial, Agriculture, Medical, Geo Textile, Transportation, Safety and sports) Types of fibres used and properties – Conventional fibres, new fibres - Ultra fine, Micro fibres, Nano fibres, Hollow fibres, Aramid fibres, Carbon, Nomex, Kevlar and Glass fibres. Bicomponent fibres Various Manufacturing methods - Braiding, Netting, Needle punching, Chemical bonding, 3D weaving and Composites	15
II	**MEDICAL TEXTILES** Definitions – Classification of medical textiles – Applications characteristics of material used - Fibres used in Non-implantable materials like wound dressing, Bandage and gauze cloth. Fibres types and manufacturing methods used in implantable materials like vascular graft, sutures and heart valves. Fibre requirements for Extra corporeal devices such as artificial skin, lever and kidney. Fibre requirements and finishing treatment adopted in healthcare and hygiene products such as surgical gowns, masks and wipes. Test methods: Bacterial filtration efficiency, Breathing resistance, Splash resistance, Knot pull strength	15
III	**GEO TEXTILES** Geo Textile: Definition and classification – Function of geo textiles (separation, Filtration, reinforcement, drainage and protection) Geo textile properties: physical, mechanical, hydraulic and	15

	environmental. Fibre and fabric types used. Types of Geo textiles:- Brief study of Geo grids, Geo membranes - Woven and Non Woven geo textile products. Application of geo textiles – Road work, railway work, erosion control, Drainage systems. Test methods: Biological clogging, Tensile properties by strip method, water permeability, filtration efficiency and abrasion resistance	
IV	**FUNCTIONAL CLOTHING** Definition – Property requirements, classification – safety and Protective Clothing – Fibres used, properties and application of High temperature clothing **–** flame protective clothing – chemical Protective Clothing – Electro Protective Clothing - High visibility clothing. Defense clothing (Camouflage dress, Bullet proof, non-visibility clothing, tent and parachute) – Application and fibres uses in Sports wear – Water proof and water resistant, breathable laminate fabric.	14
V	**TRANSPORTATION TEXTILES** Introduction – Fibre requirement and applications seat belts, Air bags and seat cover. Applications, Fibres and Yarns used Conveyor and Transmission belt. Fibres and Yarns used in Tyre cods fabrics and their manufacturing process flow chart. Fibre and yarns used in industrial hoses, Textiles in car, train, air craft and marine applications.	14

TEXT BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Fiber materials for Advanced Technical Textile	T. Matsuo	CRC publication,	2008
2	Industrial Application of Textiles for Filtration and coated fabrics	Pushpa B., and Sengupta, A.K	Textile progress, Vol.14,	1992

REFERENCE BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Hand book of Technical Textiles	A R Horrocks and S C Anand	The Textile Institute, Manchester, U.K., , Woodhead Publishing limited, Cambridge England.	2000
2	Handbook of Industrial Textiles	Sabit Adanur, Wellington sears	Technomic publishing company, Inc, Lancaster, U.S.A. ISBN:1-56676-340-1,	1995.
3	Geotextiles	N..M John	Blackie, London, ISBN: 0-216-91995-9,	1987
4	Medical Textiles	S. Anand	Text. Inst., , ISBN: 185573317X	1996
5	Hand book of nonwovens	S.J.Russell	Woodhead Publishing Ltd, England	2007

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

TEXTILE TESTING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060540
Semester	:	V Semester
Subject Title	:	TEXTILE TESTING – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE TESTING PRACTICAL	4 Hrs	64Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

- To enhance the practical knowledge of testing textile fibre, yarn and fabric and analyzing the data.
- To handle the various testing instruments for fibre, yarn and fabric.

OBJECTIVES

- To understand the working of various textile testing (fibre, yarn and fabric) instruments.

Fibre testing

- To have practical knowledge in the textile testing areas.
- Determination of trash content by Trash Analyser.
- Determination of fibre fineness by Sheffield Micronaire.

Yarn Testing

- Determination of count by cutting and weighing method.
- Determination of single yarn twist by twist tester.
- Determination of ply yarn twist by take up twist tester.

- Determination of single yarn strength.
- Determination of Lea strength and CSP.
- Determination of yarn appearance grade as per ASTM visual examination method.

Fabric testing

- Determination of fabric tensile strength by tensile strength tester
- (Warp way & Weft way).
- Determination of fabric tearing strength (Warp way & Weft way).
- Determination of bending modulus by stiffness tester for given sample of
- fabric (Warp way & Weft way).
- Estimation of bursting strength of a given fabric.
- Determination of crease recovery angle in warp way & weft way.

GUIDELINES

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

LIST OF EXPERIMENTS

1. Determination of fibre fineness by Micronaire.
2. Determination of hank of roving, count of yarn by cutting and weighing method.
3. Determination of single yarn twist by tension type twist tester.
4. Determination of ply yarn twist.
5. Determination of single yarn strength.
6. Determination of Lea strength and CSP.
7. Determination of yarn appearance grade as per ASTM visual examination method.
8. Determination of fabric tensile strength by tensile strength tester (Warp way & Weft way).
9. Determination of fabric tearing strength (Warp way & Weft way).
10. Determination of fabric stiffness by stiffness tester (Warp way & Weft way).
11. Determination of crease recovery angle in warp way & weft way
12. Determination of crimp in warp & weft yarn for the given fabric sample.

List of equipment required for a batch of 30 students:

Fibre fineness tester, Wrap block, Wrap reel, Twist tester, Lea strength tester, Yarn appearance winder, Fabric tensile strength tester, Elmendorf / Ballistic tearing strength tester, Fabric thickness tester, Crease recovery tester and Stiffness tester – each 1 no, physical balance – 2no.

Materials required for a batch of 30 students.

1. Cotton fibre - 2.0 Kgs
2. Roving bobbin - 5 bobbins
3. Yarn - cops/ cones of any count
4. Fabric - 30 meters

Manual: Laboratory manual.

MODEL QUESTION PAPER

1. Determine the fibre fineness by Micronaire.
2. Determine the hank of roving, count of yarn by cutting and weighing method.
3. Determine the single yarn twist by tension type twist tester.
4. Determine the ply yarn twist.
5. Determine the single yarn strength.
6. Determine the Lea strength and CSP.
7. Determine the yarn appearance grade as per ASTM visual examination method.
8. Determine the fabric tensile strength by tensile strength tester (Warp way & Weft way).
9. Determine the fabric tearing strength (Warp way & Weft way).
10. Determine the fabric stiffness by stiffness tester (Warp way & Weft way).
11. Determine the crease recovery angle in warp way & weft way
12. Determine the crimp in warp & weft yarn for the given fabric sample.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

TEXTILE WET PROCESSING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060550
Semester	:	V Semester
Subject Title	:	TEXTILE WET PROCESSING - PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE WET PROCESSING PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

To get knowledge on the method of preparing the dye liquor to printing paste and dyeing and printing the yarn/ fabric. To know the different finishing treatment given to dyed fabric.

OBJECTIVES

- To get knowledge on the method of analyzing the blended yarn / fabric.
- To get the practical experience in preparing the liquor for the complete Wet processing treatments.
- To get the practical experience in preparing the print paste and printing the fabric.
- To know the different finishing treatments given to the dyed fabric, depending on their end use.
- To know the different testing methods, to assess fastness of dyes to washing & rubbing.

GUIDELINES

- : All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.

- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students durong Board Examinations.

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

DETAILED SYLLABUS

Name of the Topics:

Preparatory, Printing, Finishing, Testing of dyed fabrics

V SEMESTER

4060550 - TEXTILE WET PROCESSING PRACTICAL

LIST OF EXPERIMENTS

1. De-sizing the fabric sample using enzyme.
2. Scouring & Bleaching the yarn / fabric using Hydrogen Peroxide.
3. Dyeing the cotton material with vat dyes.
4. Dyeing the cotton material with Bi-Functional reactive dyes.
5. Dyeing the polyester material with disperse dye.
6. Dyeing the wool sample with acid dye.
7. Dyeing the silk sample with basic dyes.
8. Printing the cotton fabric with reactive dye in direct style.
9. Printing the cotton fabric using Pigment by direct style.
10. Crease recovery finishing / Bio polishing of cotton fabric with resin.
11. Testing the colour fastness of dyed textile materials to washing.
12. Testing colour fastness of dyed textile materials to rubbing

No. of students	: 30
No. of students / Batch	: 03
Total No. of batches	: 10

List of Equipment Required for a Batch of 30 Students

01.	Dye bath for dyeing, desizing, scouring, bleaching	- 05 Nos.
02.	Crockmeter for rubbing fastness testing	- 01 Nos.
03.	Laundero meter for washing fastness testing	- 01 Nos.
04.	Printing table	- 01 Nos.
05.	Printing Screens	- 02 Nos.
06.	Padding Mangle	- 01 Nos.
	Manual	- Lab Manual

MODEL QUESTION PAPER

De-size the fabric sample using enzyme.

Do the Scour & Bleach the yarn / fabric using Hydrogen Peroxide.

Dye the cotton material with vat dyes.

Dye the cotton material with Bi-Functional reactive dyes.

Dye the polyester material with disperse dye.

Dye the wool sample with acid dye.

Dye the silk sample with basic dyes.

Print the cotton fabric with reactive dye in direct style.

Print the cotton fabric using Pigment by direct style.

Do the Bio polishing and Crease recovery finishing of cotton fabric.

Test the colour fastness of dyed textile materials to washing.

Test colour fastness of dyed textile materials to rubbing

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

ADVANCED FABRIC DESIGN ANALYSIS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	1060 : DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	4060560
Semester	:	V Semester
Subject Title	:	ADVANCED FABRIC DESIGN ANALYSIS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ADVANCED FABRIC DESIGN ANALYSIS PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

To enhance the practical knowledge to analyse the sample of cloth, this fundamental, help the students to acquire knowledge about the design, draft and peg plan loom requirement to weave the cloth.

OBJECTIVES

Woven fabric analysis

To identify warp and weft threads, selvedge, weaving method and machine to produce the fabric.

To analyze the given fabric and find out design, draft and peg plan.

Woven fabric quality particulars

To find out the particulars like Ends and picks per unit length, Count of warp and weft, crimp percentage.

Knitted fabric analysis

To identify warp and weft threads, selvedge, weaving method and machine to produce the fabric.

To analyze the given fabric and find out design, draft and peg plan

Knitted fabric quality particulars

To find out the particulars like Ends and picks per unit length, Count of warp and weft, crimp percentage

Fabric costing

With the above particulars the student has to do fabric costing by suitable formulae explained to them during practical.

GUIDELINES

- All the 12 cloth samples given in the list of experiments should be completed and given
- for the end semester practical examination.
- In order to develop best skills every student should be provided with a separate fabric sample of suitable size.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment / Design Work	60
Write up	30
Viva	10
Total	100

LIST OF EXPERIMENTS

1. Analysis of a given honey comb weave cloth sample for the cloth particulars.
2. Analysis of a given huck-a-back weave cloth sample for the cloth particulars.
3. Analysis of a given mock leno weave cloth sample for the cloth particulars.
4. Analysis of a given Bedford cord weave cloth sample for the cloth particulars.
5. Analysis of a given Three pick Terry cloth weave cloth sample for the cloth particulars.
6. Analysis of a given Double cloth sample for the cloth particulars.
7. Analysis of a given Extra warp figuring cloth sample for the cloth particulars.
8. Analysis of a given Extra weft figuring cloth sample for the cloth particulars.
9. Analysis of a given warp / weft Backed cloth sample for the cloth particulars.
10. Analysis of a given single jersey knitted cloth sample for the cloth particulars.
11. Analysis of a given 1 X 1 Rib knitted cloth sample for the cloth particulars.
12. Analysis of a given 1 X 1 interlock knitted cloth sample for the cloth particulars.

LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS

Equipment required **:** Beesley`s Balance 1 no

Materials required **:** 2 Meters of each samples for a batch of 30 students.

SAFETY PRECAUTIONS TO BE FOLLOWED

The students while doing the experiments,

3. Should wear safe foot wear, preferably shoes.
4. Should keep their shirts tucked in.

MODEL QUESTION PAPER

1. Analyze the given honey comb weave cloth sample for the cloth particulars.
2. Analyze the given huck-a-back weave cloth sample for the cloth particulars.
3. Analyze the given mock leno weave cloth sample for the cloth particulars.
4. Analyze the given Bedford cord weave cloth sample for the cloth particulars.
5. Analyze the given Three pick Terry cloth weave cloth sample for the cloth particulars.
6. Analyze the given Double cloth sample for the cloth particulars.
7. Analyze the given Extra warp figuring cloth sample for the cloth particulars.
8. Analyze the given Extra weft figuring cloth sample for the cloth particulars.
9. Analyze the given warp / weft Backed cloth sample for the cloth particulars.
10. Analyze the given single jersey knitted cloth sample for the cloth particulars.
11. Analyze the given 1 X 1 Rib knitted cloth sample for the cloth particulars.
12. Analyze the given 1 X 1 interlock knitted cloth sample for the cloth particulars.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

V SEMESTER

2020 – 2021 onwards

ENTREPRENEURSHIP & START UPS

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY*

Subject Code : 4060570

Semester : V Semester

Subject Title : ENTREPRENEURSHIP AND STARTSUPS

* All Branches of Diploma in Engineering and Technology and Special programmes.

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Entrepreneurship and Start-ups	4 Hrs	64 Hrs	25	100*	100	3 Hours

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

Topics and Allocation of Hours

UNIT	TOPIC	HOURS
I	Entrepreneurship – Introduction and Process	10
II	Business Idea and Banking	10
III	Start-ups, E-cell and Success Stories	10
IV	Pricing & Cost Analysis	10
V	Business Plan Preparation	10
Revision, Field visit and Preparation of case study report		14
Total		64

RATIONALE

Development of a diploma curriculum is a dynamic process responsive to the society and reflecting the needs and aspiration of its learners. Fast changing society deserves changes in educational curriculum particularly to establish relevance to emerging socio-economic environments; to ensure equity of opportunity and participation and finally promoting concern for excellence. In this context the course on

entrepreneurship and start-ups aims at instilling and stimulating human urge for excellence by realizing individual potential for generating and putting to use the inputs, relevant to social prosperity and thereby ensure good means of living for every individual, provides jobs and develop Indian economy.

OBJECTIVES

At the end of the study of 5th semester the students will be able to

- To excite the students about entrepreneurship
- Acquiring Entrepreneurial spirit and resourcefulness
- Understanding the concept and process of entrepreneurship
- Acquiring entrepreneurial quality, competency and motivation
- Learning the process and skills of creation and management of entrepreneurial venture
- Familiarization with various uses of human resource for earning dignified means of living
- Know its contribution in and role in the growth and development of individual and the nation
- Understand the formation of E-cell
- Survey and analyze the market to understand customer needs
- Understand the importance of generation of ideas and product selection
- Learn the preparation of project feasibility report
- Understand the importance of sales and turnover
- Familiarization of various financial and non-financial schemes
- Aware the concept of incubation and starts ups

DETAILED SYLLABUS

Unit	Name of the Topics	Hours
I	**Entrepreneurship – Introduction and Process** ● Concept, Functions and Importance ● Myths about Entrepreneurship ● Pros and Cons of Entrepreneurship ● Process of Entrepreneurship ● Benefits of Entrepreneur ● Competencies and characteristics ● Ethical Entrepreneurship	10

	● Entrepreneurial Values and Attitudes ● Motivation ● Creativity ● Innovation ● Entrepreneurs - as problem solvers ● Mindset of an employee and an entrepreneur ● Business Failure – causes and remedies ● Role of Networking in entrepreneurship	
II	**Business Idea and Banking** ● Types of Business: Manufacturing, Trading and Services. ● Stakeholders: sellers, vendors and consumers and Competitors ● E- commerce Business Models ● Types of Resources - Human, Capital and Entrepreneurial tools and resources ● Selection and utilization of human resources and professionals, etc. ● Goals of Business; Goal Setting ● Patent, copyright and Intellectual property rights ● Negotiations - Importance and methods ● Customer Relations and Vendor Management ● Size and capital-based classification of business enterprises ● Various sources of Information ● Role of financial institutions ● Role of Government policy ● Entrepreneurial support systems ● Incentive schemes for state government ● Incentive schemes for Central governments	10
III	**Start ups, E-cell and Success Stories** ● Concept of Incubation centre's ● Visit and report of DIC , financial institutions and other relevance institutions ● Success stories of Indian and global business legends	10

	• Field Visit to MSME's • Study visit to Incubation centers and start ups • Learn to earn • Startup and its stages • Role of Technology – E-commerce and Social Media • Role of E-Cell • E-Cell to Entrepreneurship	
IV	**Pricing & Cost Analysis and entrepreneurial traits** • Identifying and testing business opportunities in Textiles decomposing complex business problems in the field of textiles. • Identify your entrepreneurial traits to put up a spinning related business. • Identify the business opportunities that suits you in spinning/weaving. • Use the support systems to zero down to your business idea in technical textiles • Develop comprehensive business plans to market Tencel fabric • Prepare plans to manage modern weaving plant effectively.	10
V	**Business Plan Preparation** • Describe the procedure to evaluate your entrepreneurial traits as a career option for the high-quality OE yearn to be manufactured. • Steps in setting up of a denim business. • Arrive at a business opportunity on the basis of given data/circumstances with justification. • Describe the schemes offered by the government for starting the specified enterprise. • Suggest a suitable place for setting up Medical textiles on the basis of given data/circumstances with justification.	10

	• Suggest the steps for the selection process of an enterprise for bandage cloth with justification. • Describe the market study procedure of the Linen. • Market study procedures: questionnaire design, sampling, market survey, data analysis • Bring out one Business Plan as a micro-project	

REFERNCE BOOKS:

1. Dr. G.K. Varshney, Fundamentals of Entrepreneurship, Sahitya Bhawan Publications, Agra - 282002
2. Dr. G.K. Varshney, Business Regulatory Framework, Sahitya Bhawan Publications, Agra - 282002
3. Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd, Entrepreneurship, McGraw Hill (India) Private Limited, Noida - 201301
4. M.Scarborough, R.Cornwell, Essentials of Entrepreneurship and small business management, Pearson Education India, Noida - 201301
5. Charantimath Poornima M. Entrepreneurship Development and Small Business Enterprises, Pearson Education, Noida - 201301
6. Trott, Innovation Management and New Product Development, Pearson Education, Noida - 201301
7. M N Arora, A Textbook of Cost and Management Accounting, Vikas Publishing House Pvt. Ltd., New Delhi-110044
8. Prasanna Chandra, Financial Management, Tata McGraw Hill education private limited, New Delhi
9. I. V. Trivedi, Renu Jatana, Indian Banking System, RBSA Publishers, Rajasthan
10. Simon Daniel, HOW TO START A BUSINESS IN INDIA, BUUKS, Chennai - 600018
11. Ramani Sarada, The Business Plan Write-Up Simplified - A practitioners guide to writing the Business Plan, Notion Press Media Pvt. Ltd., Chennai 600095.

Board Examination – Evaluation Pattern

Internal Mark Allocation

Assignment (Theory portion) *	-	10
Seminar Presentation	-	10
Attendance	-	5
Total	**-**	**25**

Note: * Two assignments should be submitted. The same must be evaluated and converted to 10 marks.

Guidelines for assignment:

First assignment – Unit I

Second assignment – Unit II

Guidelines for Seminar Presentation - Unit III

Each assignment should have five three marks questions and two five marks questions.

BOARD EXAMINATION

Note

1. The students should be taught all units and proper exposure and field visit also arranged. All the portions should be completed before examinations.
2. The students should maintain theory assignment and seminar presentation. The assignment and seminar presentation should be submitted during the Board Practical Examinations.
3. The question paper consists of theory and practical portions. All students should write the answers for theory questions (40 Marks) and practical portions (60 Marks) should be completed for board examinations.
4. All exercises should be given in the question paper and students are allowed to select by lot. If required the dimensions of the exercises may be varied for every batch. No fixed time allotted for each portion and students have liberty to do the examination for 3Hrs.
5. For Written Examination: theory question and answer: 45 Marks
   Ten questions will be asked for 3 marks each. Five questions from each unit 1 & 2. (10 X 3 = 30).
   Three questions will be asked for 5 marks each. One question from each unit 1, 2 & 3. (3 X 5 = 15)
6. For Practical Examination: The business plan/Feasibility report or Report on Unit 4 & 5 should be submitted during the board practical examinations. The same have to be evaluated for the report submission (40 marks).

DETAILED ALLOCATION OF MARKS

Sl. No	Description	Marks
Part A	Written Examination - Theory Question and answer (10 questions x 3 marks:30 marks) & (3 questions x 5 marks: 15 marks)	45
Part B	Practical Examination – Submission on Business Plan/Feasibility Report or Report on Unit 4 & 5	40
Part C	Viva voce	15
	Total	**100**

ENTREPRENEURSHIP AND START UPS

MODEL QUESTION PAPER

Time: 3 Hrs. Max.Marks:100

PART – A

I Answer all the questions. (10 x 3 = 30)

1. Define entrepreneurship.
2. State the process of entrepreneurship
3. What are the benefits of being an entrepreneur?
4. How do entrepreneurs act as problem solvers?
5. Outline the role of networking in entrepreneurship.
6. List the various types of business
7. Outline the business model.
8. Suggest the various goals of business.
9. How selection of human resources is carried out?
10. Specify the role of government policy on entrepreneurship.

II Answer all the questions (3 x 5 = 15)

11. Describe the importance of innovation on entrepreneurship.
12. Enumerate the various incentive schemes for the central government.
13. How technology will play a major role in E- commerce?

PART – B

Practical Examination – Submission on Business Plan / Feasibility Report or Report on Unit 4 & 5 **(40)**

PART – C

Viva Voce **(15)**

VI SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

TEXTILE MANAGEMENT

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060610

Semester : VI Semester

Subject Title : TEXTILE MANAGEMENT

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE MANAGEMENT	5 Hrs	80 Hrs	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS	15
II	PRODUCTION AND FINANCIAL MANAGEMENT	15
III	HUMAN RESOURCE MANAGEMENT	15
IV	SUPERVISORY AND SAFETY MANAGEMENT	14
V	EXPORT MANAGEMENT	14
	TEST & REVISION	07
Total		80

RATIONALE

To study the fundamental concept in personal management, production management and export marketing management.

To enhance the knowledge for the supervisory job in textile mills, their authority and responsibility will be taught to the students.

To improve the knowledge in inventory control in stores and also financial management techniques will be taught to the students.

OBJECTIVES

- To know about the fundamentals of management and the various functions of personnel management.
- To have knowledge about components and systems of wage payment.
- To know about the various labour welfare activities in a textile mill.
- To know about the layouts and industrial buildings, factors influencing selection of site.
- To know about productivity, labour and machine productivity and the factors affecting them.
- To know about the role of supervisor in a textile unit, causes and precautions and prevention of industrial accidents and safety devices used in textile mills.
- To know about inventory control and the methods adopted, material handling in textile mills.
- To know about financial management, cost and its components, calculation of Ex-mill price and break even analysis.
- To know about export policy of India, export promoting agencies and their functions, export order processing and export pricing methods.

4060610 TEXTILE MANAGEMENT

DETAILED SYLLABUS

Content: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAYOUTS** Management – Definition, Functions and Principles. Organization structure of any Textile Unit. Selection of site - Various factors of site selection for various textile industries. Industrial Buildings – Types. Importance of Lighting, Ventilation and Humidification. Plant layout - Process, Product, Combination - their merits and demerits. Suitable Layout for Spinning, Weaving, Processing and Garment industries. Eco Management.	15
II	**PRODUCTION AND FINANCIAL MANAGEMENT** Production, Productivity, Labour Productivity Index (LPI) and Machine Productivity Index (MPI). Production Information System, Application of Work Study, Method Study, Time Study and Work Measurement in a Textile Mill. Material Handling – Importance, Various Equipment used for Material Handling in a Textile Industry. Production Planning and Control (PPC) – Functions, Enterprise Resource Planning (ERP). Inventory control - Economic Order Quantity (EOQ), ABC and VED Analysis. Financial Management – Sources of Finance. Cost – Elements, Techniques of Costing, System of Costing - Method of Calculating Ex-Mill Price. Break Even Analysis. Depreciation.	15
III	**HUMAN RESOURCE MANAGEMENT** HRM – Importance. Man Power Planning, Job Analysis and Job Evaluation. Recruitment – Sources, Selection Process in Recruitment. Training – Importance and types of Training Process. Wages – Its Components. Method of Wage Payment. Incentives – Types, Merits and Demerits. Labour Welfare Activities – Role of Labour Welfare Officer. Labour grievances - Causes Grievance Redressal procedures.	15

IV	**SUPERVISORY AND SAFETY MANAGEMENT** Supervisor – Role, Leadership – Role, Difference Between Leader and Manager. Transformational Leadership. Motivation - Need, Importance and Types of motivation - Maslow's theory, XYZ theory in motivation. Communication- Principle of effective communication - types of communication - barriers of communication. Labour welfare activities with respect to factories act. Industrial safety- Causes of accidents, preventive measures. Guards and safety devices in textile mill. Types of fire and fire prevention. Application of 5 S and Kaizen principles for effective supervision.	14
V	**EXPORT MANAGEMENT** Importance and benefits of international marketing. World Trade Organisaiton (WTO) – functions of WTO. Various export promotion measures by government of India. Functions of TEXPROCIL, AEPC, PEDEXIL, HEPC and Textile committee. Export procedure - Export incentives. Importance of Shipping bill and bill of lading. Export finance –pre shipment finance and post shipment finance. Letter of Credit. Export pricing-Ex factory, Free On Truck (FOT), Free On Board (FOB), Cost & Freight(C&F), Cost Insurance Freight (CIF) and Franco pricing. Brief Idea about Management Information System (MIS), Just In Time (JIT) and Total Quality Management (TQM).	14

TEXT BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Principles Of Management	P.C.Tripathi	Tata Mcgrow Publishing Compny Ltd,New Delhi	2001
2	Management Of Textiles	Dudega.V.D	Trade Press, Textile Indistry ,Ahemadabad	1981

REFERENCE BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS
1	Principles of Management	P.C.Tripathi	Tata Mcgrow Publishing Compny Ltd, New Delhi
2	Management of Textiles	Dudega.V.D	Trade Press, Textile Indistry ,Ahemadabad
3	Industrial Engineering	A P Verma	S K Kataria.
4	Personnel Management Of Humoun Resoures	Mamoria.C.B	Himalaya Pubishingh House, Mumbai
5	Organisation Theory & Behaviour	Luthans.F	Printece Hall Of India
6	Management Of Textile	Ormerod.A	Butter Worth &Company
7	Industrial Eng. & Management Science	Bauga.T.R;Etal	Khanna PublisherNew Delhi
8	Business Management Theory	Singa. J.C & Mugali.V.N	R.Chand & Co, New Delhi
9	Costing in Textile Mills	SITRA	SITRA, Coimbatore
10	Export Management	T A S Balagopal	Himalaya Pubishingh House, Mumbai
11	Industrial Organisation and Engineering Economics	S C Sharma, T R Banga	Khanna PublisherNew Delhi

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DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

GARMENT MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060620

Semester : VI Semester

Subject Title : GARMENT MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
GARMENT MANUFACTURE	5 Hrs	80 Hrs	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION	15
II	DRAFTING AND PATTERN LAYOUT	15
III	CUTTING AND GARMENT CONSTRUCTION	15
IV	PACKING AND QUALITY REQUIREMENTS	14
V	FASHION DESIGN	14
	TEST & REVISION	07
Total		80

RATIONALE

To understand the Textile industry and the market, an effort is made to equate the products' features with the requirement of the Markets. In order to achieve this objectives a broad sweep various subjects in the entire textile spectrum is elaboratedto the level of the diploma students.

OBJECTIVES

1. To know about human anatomy, pattern making and garment making tools
2. To understand pattern layout & cutting
3. To familiarize with sewing, embroidery & clothing construction
4. To know about pressing, packing & quality control
5. To understand fashion design concept

4060620 - GARMENT MANUFACTURE

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION** Flow chart for garment manufacturing process in garment industry. Eight head theory of human anatomy and its uses. Measurements – importance, Measurements to be taken for children's, Ladies, and Gent's. Paper patterns - importance – Types - Commercial patterns and personal patterns - Principles of pattern drafting –Purpose of Pattern grading. Tools required for garment making – Measuring tools, Cutting tools - Pattern making tools - Pressing tools.	15
II	**DRAFTING AND PATTERN LAYOUT** Pattern making of 'A' line frock - Ladies skirt - Gent's half sleeve shirt - Ladies nightwear. Fabrics used in garment manufacture – Plain, Striped, Plaid, Printed and one way. Rules for pattern layout – types of Layout (length wise Cross wise, partial length wise, partial cross wise, combined fold and open layout). Special layouts for asymmetrical, striped, checked and one-way designs – Types of Lay. Lay length and Marker planning.	15
III	**CUTTING AND GARMENT CONSTRUCTION** Objectives of spreading & cutting - Importance of cutting - Brief study on types of cutting machines – Straight knife - Band knife - Round knife -LASER cutting. Sewing Machine Parts and its function. Stitches – Properties and Application of Lock stitch, Chain stitch, 3 thread over lock, 5 thread flat lock. Brief study of different types of Seams – Plain, bound flat & Slot seam. Construction of 'A' line frock, Ladies skirt, Gent's half sleeve shirt and Ladies nightwear.	15

IV	**PACKING AND QUALITY REQUIREMENTS** Types of pressing and its Objectives. Packing materials, Different methods of Packing – Ratio pack, Assortment pack, Colour wise pack, Size wise pack. Methods of fabric inspection - Study of 4 point and 10-point system. Types of Inspection – Raw Material Inspection -– Brief study of in-process inspection and Final inspection. Brief study of Garment defects. Accepted Quality Level (AQL). ISO certification for the Garment Industry. Objectives of Organic cotton certification - GOTS, WRAP, SA8000, Oeko-Tex and Supima	14
V	**FASHION DESIGNING** Elements of Design – Line, Shape, Texture, colour and value. Principles of design – Balance, Proportion, Emphasis, Rhythms and Harmony. Pigment theory of colours – Primary, Secondary and Tertiary colours. Color dimension (Hue, Intensity, value, tint, shade and tone) - Warm and Cool Colors. Design – Different types of structural designs and decorative designs on dress. Basic concepts of Fashion show – Fashion Forecasting. Buying office and its importance.	14

TEXT BOOKS

S.NO	Author	Title	Publisher	Edition	Year
1	Carr and Lathem	The Technology of Clothing Manufacture	Blackwell Publication Oxford UK	2nd Indian Reprint	2004
2	Gerry Cooklin	Introduction to Clothing Manufacture	Blackwell Publication Oxford UK	2nd Indian Reprint	2005
3	Pradip V.Metha & Satish. K. Bharadwaj	Managing Quality in the Apparel Industry	New Age International Publishing, New Delhi	1st Edition Reprint	2006

REFERENCE BOOKS

S.NO	Author	Title	Publisher	Edition	Year
1	Anna Jacob Thomas	The Art of Sewing	UBS Publishers, New Delhi	6th Reprint	2001
2	Mary Mathews	Practical clothing constructions Part I & II	Paprinpack Printers, Chennai	1st Edition	1985
3	Erwine Mabel.D	Clothing for Moderns	Macmillan Pub. Co., New York.	1st Edition	1979
4	Virgin Stolpe Lewis	Comparative clothing construction Techniques	Surjeet Publications, Delhi	1st Edition	1984

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DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

ELECTIVE - II

MAINTENANCE OF TEXTILE MACHINERY

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060631

Semester : VI Semester

Subject Title : ELECTIVES –II MAINTENANCE OF TEXTILE MACHINERY

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ELECTIVES –II MAINTENANCE OF TEXTILE MACHINERY	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	BASIC OF MAINTENANCE - PLANNING, SCHEDULING AND CONTROLLING	15
II	STORE CONTROL, ASSESSMENT OF MAINTENANCE, APPLICATION OF NEW CONCEPTS	15
III	GAUGES AND TOOLS, VIBRATION AND LEVELLING	15
IV	MAINTENANCE OF SPINNING MACHINERIES	14
V	MAINTENANCE OF WEAVING KNITTING AND SEWING MACHINES	14
	TEST & REVISION	07
Total		80

RATIONALE

To study the fundamental concept in basics of maintenance, store control & maintenance of spinning and weaving machineries.

To enhance the knowledge for the maintenance supervisory job in textile mills, their authority and responsibility will be taught to the students.

To improve the knowledge in inventory control in stores and also maintenance cost

will be taught to the students.

OBJECTIVES

- To know about the basics of maintenance
- To understand about planning, scheduling and controlling.
- To have knowledge about stores and inventory control.
- To know about the tools and gauges used in Textile industry.
- To understand the balancing of machines.
- To gain knowledge in routine and preventive maintenance of spinning machines.
- To acquire knowledge about lubrication of spinning preparatory machines.
- To understand the routine and preventive maintenance of Weaving machines.
- To understand the routine and preventive maintenance of knitting and sewing machines.

ELECTIVE – II 4060631 MAINTENANCE OF TEXTILE MACHINERY
DETAILED SYLLABUS

Content: Theory

Sl.No.	Name of Topic	Time
I	**Basics of Maintenance - Planning, Scheduling and Controlling** Organisation chart of spinning mill. Objectives of Maintenance. - Basics requirements for good maintenance, Different types of Maintenance- Planned and break down maintenance. Scope and their suitability. Maintenance Planning. Fundamentals of planning-Duration, frequency, list of activities. Factors involved in Maintenance planning - Equipment history record, recommendation of machinery manufacturer and experts, Yearly maintenance programme. Maintenance Scheduling – Yearly maintenance plan, weekly work order, Rescheduling of maintenance. Maintenance Control - Objective. Records for effective control - machine card, emergency work order, monthly computations of spares and lubrication record, maintenance ledger, OT register, accident register. Duties and responsibilities of maintenance supervisor.	15
II	**Store control, Assessment of Maintenance, Application of New Concepts** Stores – definition of store. Requirements for good store control. Bin card - Importance and Advantages of bin card. ABC analysis. Records maintained in stores - indent on store, material refund note, store ledger. Duties and responsibilities of a store keeper. Importance of coordination of production, quality and maintenance departments in textile mills. Assessment of existing maintenance-objectives-machine availability %, Maintenance cost %, labour performance index, machine performance. Delay analysis and maintenance audit. Housekeeping and 5S work practice. Concepts of Total Productive Maintenance (TPM) & Selective Maintenance Program (SMP). Total quality management (TQM), Six sigma.	15

III	**Gauges and Tools, Vibration and Levelling** Gauges and Tools- Brief study of various gauges used in textile industry for Maintenance-leaf gauge, Tacho meter, Dial gauge, shore hardness tester, Top roller cot diameter checking gauge, , Top Arm Roller Pressure (TARP) checking gauge, AITRA pneumafil suction pressure checking gauge, Bottom roller setting gauge, Torque wrench, Card wire inspection microscope. Special lubricating equipment for spindle oil topping, flushing and replenishing (lubristor). Vibration - Causes of vibration - Effects of vibration - Measurement of vibration - Shirley roller vibration detector- brief study of stroboscope. Levelling- Purpose of levelling. Various levelling instruments- Sprit level and water level. Static and dynamic balancing of card cylinder.	15
IV	**Maintenance of Spinning Machineries** Metallic Card wire clothing-Procedure and equipment used for card clothing. Card grinding - importance of grinding – procedure and equipment used for grinding. Cots buffing- importance of cots buffing - procedure and equipment used- Berkoloation. Roller eccentricity- causes of roller eccentricity. Spindle and lappet gauging – importance and procedure. Routine and Preventive maintenance - Maintenance program for Blow room, Carding, Draw frame, Comber, Simplex, Spinning frame. Maintenance of spinning machineries during strike and lock out periods. Erection procedure for carding machine, simplex, and ring frame.	14
V	**Maintenance of Weaving, Knitting and Sewing Machines** Routine and Preventive maintenance - Maintenance program for winding -warping - pirn winding – sizing machines. Maintenance program for plain, automatic looms. Maintenance of loom parts - Care and maintenance of heald, reed, shuttle, picker. Conversion of plain looms to semi automatic looms. Step by step procedure for loom erection.	14

	Maintenance of weaving preparatory machines and looms during strike and lay off periods. Maintenance of knitting and simple sewing machines. Maintenance of humidification plant and air compressor.	

TEXT BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Maintenance Management in Spinning	T.V.Rathinam K.P.Chellamani	SITRA Coimbatore	2004
2	Maintenance in Ring Spinning	AT.Shahani, B.P.Todankar, C.K.Mistry and N.Balasubramanian	BTRA Publications, LBS marg Ghatkoper, Bombay – 86	1979

REFERENCE BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Maintenance of Textile Machinery (Spinning, Weaving and Processing)	---	TAIRO publication Baroda	1970
2	Norms for Mechanical Processing	---	BTRA Bombay – 86	1979
3	Repair and Adjustment of Textile Machineries	T.Granovsky	MIR publisher Moscow	1984
4	Maintenance Schedules, Practice and Check Points in Spinning	---	BTRA Bombay	1979
5	Contemporary Textile Engineering	Prof. F. Happy	University of Bradford Academic press 24/28 Oval road London LW 1	1984
6	Process Control in Spinning	A.R.Grade	ATIRA	1987

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

ELECTIVE - II

PROCESS CONTROL IN SPINNING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060632

Semester : VI Semester

Subject Title : ELECTIVES –II PROCESS CONTROL IN SPINNING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
PROCESS CONTROL IN SPINNING	5 Hrs	80Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	PROCESS CONTROL IN FIBRE MIXING	15
II	PROCESS CONTROL IN BLOWROOM, CARDING AND COMBER	15
III	PROCESS CONTROL IN SPINNING	15
IV	CONTROL OF YARN QUALITY- COUNT AND STRENGTH	14
V	CONTROL OF YARN QUALITY – UNEVENNESS AND IMPERFECTION	14
	TEST & REVISION	07
Total		80

RATIONALE

This subject covers the process control in fibre mixing, blowroom, carding and spinning. This subject helps to find out the control of the yarn qualities which are mostly used in spinning mills. By studying this subject student will become as a quality control officer. This subject covers how to control all the spinning process.

OBJECTIVES

- To know about the process control in fibre mixing.
- To understand about the process control in blowroom, carding and comber.
- To have knowledge about the process control in spinning.
- To gain knowledge in control of the yarn quality - count & strength
- To acquire knowledge about the control of the yarn quality – unevenness & imperfection.

ELECTIVE – II 4060632 PROCESS CONTROL IN SPINNING
DETAILED SYLLABUS

Content: Theory

Sl.No.	Topic	Time
I	**PROCESS CONTROL IN FIBRE MIXING** Role and scope of process control in spinning – key variables for process control – control of mixing quality through fibre characteristic - control of mixing cost and material quality – linear programming for cotton mix - Application of linear programming in a mill. Yarn realization – Definition -formula-Control of yarn realization and waste – Norms for yarn realization – Accounting of reusable soft waste-Judging yarn realization of mill.	15
II	**PROCESS CONTROL IN BLOWROOM, CARDING AND COMBER** Control of waste and cleaning in blowroom and carding – determination of trash content and clearing efficiency – Norms for cleaning efficiency of individual machines in blowroom. Assessing the performance of Blow room – Optimizing cleaning at cards – Brief study on control of neps and fibre rupture in blowroom and card - control of comber waste – optimum level of comber waste. Norms of improvement in mean length on combing –Need for routing check of comber waste – procedure for control of comber waste.	15
III	**PROCESS CONTROL IN SPINNING** Introduction to measurement and analysis of productivity – definitions of indices of Productivity – productivity analysis – Improvement in	15

	productivity – maximizing machine efficiency in ring spinning – Reduction of end breakage in Ring frame – Recording and analyzing end breakage rate - Control of hairiness of ring spun yarns - Process control measures to be adopted for Rotor spinning.	
IV	**CONTROL OF YARN QUALITY- COUNT AND STRENGTH** Control of yarn quality – count and strength and their variability – Reducing within bobbin count variation – Control of sliver evenness – control of stretch at fly frames – reducing between bobbin count variation – Routine control of count – control of variability of lea strength – Factors affecting yarn strength – norms for lea strength – Single yarn strength and elongation.	14
V	**CONTROL OF YARN QUALITY – UNEVENNESS AND IMPERFECTION** Introduction – Measurement and assessment of yarn unevenness, Assessment of sliver and roving unevenness. Types of yarn irregularity: Random irregularity – Periodic irregularity – Quasi – Contributions to yarn irregularity. Measurement and assessment of imperfections – causes of thick and thin places – Fibre neps : Assessment and control – Judging of yarn appearance – check list for control of yarn unevenness and thick and thin places. Yarn faults and package defects.	14

TEXT BOOK

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Process control in spinning	A. R. Grade & T.A. Subramaniam	ATIRA SILVER JUBILEE MONOGRAPGS, ATIRA – Ahamedabad Pin – 380 015	1978
2	Process control and yarn quality in spinning	G.Thilagavathi and T. Karthik	Woodhead publishing India Pvt Ltd, Delhi	2016

REFERENCE BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	End breaks in Ring spinning	A.R. Grade T.A. Subramaniam	ATIRA Ahamedabad – India	1974
2	Quality control in spinning	TV Ratnam K.P.chellamani	SITRA Coimbatore-641014	2005

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DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

GARMENT MANUFACTURE PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060640

Semester : VI Semester

Subject Title : GARMENT MANUFACTURE PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
GARMENT MANUFACTURE PRACTICAL	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

The diploma students should necessarily have basic practical skills and knowledge to get their work done in their carreer in the industry and trade, where they are going to get absorbed either as technicians or administrators or entrepreneurs. This is achieved by introducing practical experiments with hands on experience in the specified subjects.

OBJECTIVES

- To learn the fundamentals of pattern drafting.
- To understand the concepts of garment making.
- To familiarize them with colour theory and fashion concepts.
- To know the application of design in men’s and kids garments through computer.

GUIDELINES

- All the 12 experiments given in the list of experiments should be completed and given for the Board Practical Examination.

- To develop best skills in handling Instruments / Equipment and taking readings in the practical classes, every batch of students should be provided with a separate experimental setup for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations.

LIST OF EXPERIMENTS

1. Preparation of a pattern for Basic T-shirt.
2. Preparation of a pattern for A-line frock.
3. Preparation of a pattern for Ladies skirt
4. Preparation of a pattern for Ladies nightwear.
5. Preparation of a pattern for Gent's shirt with half sleeve.
6. Construction of a A- line frock using the given paper pattern
7. Construction of ladies skirt using the given paper pattern
8. Construction of ladies nightwear using the given paper pattern
9. Construction of Gents shirt with half sleeve using the given paper pattern
10. Designing a kids party wear and decorate it with suitable colour scheme using computer (paint & brush)
11. Designing a ladies night wear using computer (paint & brush)
12. Designing a men's T-shirt with suitable column using computer (paint & brush)

DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	**MARKS**
Experiment	50
Write up / diagram	40
Viva - Voce	10
Total	100

EQUIPMENT LIST

S.NO.	NAME OF EQUIPMENT
1	Lock Stitch Pedal Sewing Machine – 10 Nos.
2	Steam Iron Box – 1 No.
3	Drafting & Cutting Table – 1 No.
4	Two numbers of personal computers

MODEL QUESTION PAPER

1. Prepare a pattern for Basic T-shirt.
2. Prepare a pattern for A-line frock.
3. Prepare a pattern for Ladies skirt
4. Prepare a pattern for Ladies nightwear.
5. Prepare a pattern for Gent's shirt with half sleeve.
6. Construct a of A- line frock using the given paper pattern
7. Construct of ladies skirt using the given paper pattern
8. Construct of ladies nightwear using the given paper pattern
9. Construct of Gents shirt with half sleeve using the given paper pattern
10. Design a kids party wear and decorate it with suitable colour scheme using computer (paint & brush)
11. Design a ladies night wear using computer (paint & brush)
12. Design a men's T-shirt with suitable column using computer (paint & brush)

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DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

TEXTILE PRODUCT COSTING PRATICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : **4060650**

Semester : VI Semester

Subject Title : TEXTILE PRODUCT COSTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE PRODUCT COSTING PRACTICAL	6 Hrs	96 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE

To enhance the practical knowledge to determine the balancing machinery in spinning and weaving and also to estimate the cost of ex- mill prices in spinning yarn and weaving.

OBJECTIVES

- To determine the balancing machinery of the ring spinning
- To determine the balancing machinery of the auto loom and power loom
- To estimate the ex- mill price of carded and combed yarn
- Estimate the ex- mill price of woven fabric
- To Estimate the price of men's half sleave shirt

GUIDELINES

- All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling instruments / equipment and taking readings in the practical classes, every two students should be provided with a separate equipment set up for doing experiments in the laboratory.

- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

4060650 -TEXTILE PRODUCT COSTING PRACTICAL

LIST OF EXPERIMENTS

1. Suggesting suitable settings, speeds and other important changes to be made from blow room to ring frame for processing Cotton to man-made fibre.
2. Estimating balancing of machinery for 12,000 spindles capacity for processing carded yarn and draw spin plan.
3. Estimating balancing of machinery for 30,000 spindles capacity for combed yarn and spin plan
4. Estimating balancing of machinery for 100 ordinary loom capacity
5. Estimating balancing machinery for 200 automatic looms capacity
6. Estimating the ex-mill price for one kg of carded yarn.
7. Estimating the ex-mill price for one kg of combed yarn.
8. Estimating the ex-mill price of given woven fabric by assuming necessary data.
9. Estimating the ex-mill price of given woven dyed fabric by assuming necessary data.
10. Estimating the cost of A-line frock.
11. Estimating the cost of T-shirt.
12. Estimate the cost of Tunic top.

DETAILED ALLOCATION OF MARKS

PARTICULARS	MARKS
Experiment	40
Write up / diagram	50
Viva - Voce	10
Total	100

MODEL QUESTION PAPER

1. Suggest suitable settings, speeds and other important changes to be made from blow room to ring frame for processing Cotton to man-made fibre.
2. Estimate balancing of machinery for 12,000 spindles capacity for processing carded yarn and draw spin plan.
3. Estimate balancing of machinery for 30,000 spindles capacity for combed yarn and spin plan
4. Estimate balancing of machinery for 100 ordinary loom capacity
5. Estimate balancing machinery for 200 automatic looms capacity
6. Estimate the ex-mill price for one kg of carded yarn.
7. Estimate the ex-mill price for one kg of combed yarn.
8. Estimate the ex-mill price of given woven fabric by assuming necessary data.
9. Estimate the cost of A-line frock.
10. Estimate the cost of T-shirt.

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DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N- SCHEME

VI SEMESTER

2020 – 2021 onwards

PROJECT WORK & INTERNSHIP

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1060 : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 4060660

Semester : VI Semester

Subject Title : PROJECT WORK & INTERNSHIP

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
PROJECT WORK & INTERNSHIP	6 Hrs	96 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

OBJECTIVES

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment.
- Get exposure on industrial environment and its work ethics.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project repot.

INTERNAL ASSESSMENT

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of Assessment	Period of Assessment	Max. Marks
First Review	6th week	10
Second Review	14th week	10
Attendance	Entire Semester	5
Total		25

INTERNSHIP:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year “Project Work & Internship” for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Board examination.

ALLOCATION OF MARKS

PARTICULARS	MARKS
Demonstration / presentation	25
Report	25
Viva Voce	30
Internship Report	20
Total	100

VII SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY /
DIPLOMA IN TEXTILE TECHNOLOGY SANDWICH

III YEAR

N - SCHEME

VII SEMESTER

2020 – 2021 onwards

INDUSTRIAL TRAINING & VIVA VOCE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

N -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 2060 : DIPLOMA IN TEXTILE TECHNOLOGY

Course Code : 2060

Subject Code : 4060712

Semester : VII Semester

Subject Title : INDUSTRIAL TRAINING & VIVA VOCE

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Days / Week	Weeks / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
INDUSTRIAL TRAINING & VIVA VOCE	6	96	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Each student has to undergo industrial Training in Textile Industries for a period of 16 weeks during VII Semester.

ALLOTMENT OF MARKS

TIME: 3 HRS. MAX.MARKS: 100

Industrial Review I (6th week)	10
Industrial Review II (12th week)	10
Attendance	05
Total	25

BOARD EXAMINATION

ALLOCATION OF MARKS

Report and Record	40
Report Presentation (Write up)	30
Viva – Voce	30
Total	100