

Hemchandracharya North Gujarat University,
Patan



Bachelor of Vocation

Programme on
Textile and Ginning Technology



Offered at

Pramukh Swami Science and H.D. Patel Arts College

Sarva Vidyalaya Campus, Kadi

Preface

The University Grants Commission (UGC) has launched a scheme on skills development based higher education as part of college/university education, leading to setting up of Bachelor of Vocation (B Voc) to serve multiple needs, including (i) career oriented education and skills to students interested in directly entering the workforce; (ii) contracted training and education programmers for local employers; (iii) high-touch remedial education for secondary school graduates not ready to enroll in traditional colleges, giving them a path to transfer to three or four year institutions; and (iv) general interest courses to the community for personal development and interest. Bachelor of Vocation will have with multiple exits such as Diploma/Advanced Diploma under the NSQF(National Skills Qualifications Framework).

The Bachelor of Vocation model, by and large, will be accessible to a large number of individuals of the community, offer low cost and high quality education locally, that encompasses both vocational skills development as well as traditional coursework, thereby providing opportunities to the learners to move directly to the employment sector or move into the higher education sector. It offers a flexible and open education system which also caters to community-based life-long learning needs. It has a synergistic relationship between the community, community college and the job market.

About the programme

Cotton is a crop that exerts considerable influence on India's economy. Besides securing livelihood for over 60 million people engaged in various vocations related to farming, trade and textile industry. The ginning industry separates cotton fibers from seeds. The ginning process is the most important mechanical treatment that cotton undergoes before it is converted into yarns and fabrics. Any damage caused to the quality of fibers during ginning cannot be rectified later in the spinning or subsequent processes and milling.

This course is based on Ginning and Spinning technologies. By introducing this course skilled persons are produced whom can work in the cotton and spinning industries with high efficiency and productivity.

I=INTERNAL EXAM,E=EXTWRNAL EXAM,

ESE=END SEMESTER EXAM, PA=PROGRESSIVE ASSESMENT

SEMESTER I

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT101	COMUNICATION SKILL	2	0	2	40	60	00	00	100
TGT102	ENGINEERING WORK SHOP PRACTICE (MECHANICAL)	0	8	8	00	00	80	120	200
TGT103	SEED COTTON PROCESSING	4	0	4	40	60	00	00	100
TGT104	OPERATION OF SPINNING MACHINES	0	8	8	00	00	80	120	200
TGT105	SPINNING MACHINERY 1	2	2	4	30	50	40	80	200
TGT106	SPINNING PROCESS 1	2	2	4	30	50	40	80	200
	TOTAL			30	170	270	200	360	1000

SEMESTER II

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Fie ld		Th.		Practical		
					I	E	ESE	PA	
TGT201	ENGINEERING PHYSICS	2	2	4	30	50	40	80	200
TGT202	ENGINEERING WORK SHOP PRACTICE (ELECTRICAL)	0	6	6	00	00	40	60	100
TGT203	GINNING TECHNOLOGY 1	4	0	4	40	60	00	00	100
TGT204	SPINNING PROCESS 2	4	0	4	40	60	00	00	100
TGT205	GINNING PRACTICE	0	6	6	00	00	40	60	100
TGT206	SPINNING PRACTICE	0	6	6	00	00	40	60	100
	TOTAL			30	110	170	160	260	700

SEMESTER III

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT301	COTTON QUALITY AND ITS TESTING	2	6	8	30	50	40	80	200
TGT302	HUMAN RESOURCE MANAGEMENT	2	0	2	40	60	00	00	100
TGT303	GINNING TECHNOLOGY 2	2	2	4	30	50	40	80	200
TGT304	SPINNING MACHINERY 2	2	2	8	30	50	40	80	200
TGT305	COTTON TESTING PRACTICE	0	8	8	00	00	80	120	200
TGT306	ENVIRONMENT CONSERVATION & HAZARD MANEGMENT	4	0	4	40	60	00	00	100
TOTAL				30	170	270	200	360	1000

SEMESTER IV

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT401	GINNING MACHINERY MAINTENANCE	2	4	6	30	50	40	80	200
TGT402	SPINNING MACHINERY MAINTENANCE	2	4	6	30	50	40	80	200
TGT403	YARN QUALITY PERAMETERS AND THEIR TESTING	2	0	2	40	60	00	00	100
TGT404	PROCESS CONTROL AT SPINNING	2	4	6	30	50	40	80	200
TGT405	PROCESS CONTROL AT GINNING	2	4	6	30	50	40	80	200
TGT406	HUMIDIFICATION AND YARN CONDITIONING	2	2	4	30	50	40	80	200
TOTAL				30	190	310	200	400	1100

SEMESTER V

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT501	COMPUTER APPLICATION	0	6	6	00	00	40	60	100
TGT502	INDUSTRIAL PROTECTION	4	2	6	30	50	40	80	200
TGT503	INDUSTRIAL MANAGEMENT	3	0	3	40	60	00	00	100
TGT504	STATISTICAL QUALITY CONTROL	3	0	3	40	60	00	00	100
TGT505	INDUSTRIAL PRACTICE AT GINNING	0	12	12	00	00	160	240	400
TOTAL				30	110	170	240	380	900

SEMESTER VI

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT601	ELECTRICAL AND ELECTRONICS ENGGFOR GINNING & SPINNING	2	2	4	30	50	40	80	200
TGT602	ENTREPRENURSHIP DEVELOPMENT	4	0	4	40	60	00	00	100
TGT603	ELECTRONIC PRACTICE	0	4	4	00	00	40	60	100
TGT604	INDUSTRIAL PRACTICE AT SPINNING	0	18	18	00	00	160	240	400
TOTAL				30	70	110	240	380	800

BVTGTR1: Eligibility Criteria (EC) for Admission

1. The eligibility conditions for admission to the program will be 10+2 or equivalent in any stream .
2. If the candidate has attained the specific level 4 of NOS of Bachelor of Vocation sector (by decision of equivalence committee of the college) can get admitted in B.Voc. for the programme
3. There is no age bar for admission to Bachelor of Vocation
4. The student can take exit from this course at any point of time and can get re-entry in this programme. Such students will get priority in admission than to a fresher student. (multi entry multi exit scheme)

BVTGTR2: Admission Procedure

1. For admission to the programmes offered, preference should be given to the learners living in the local community. Reservation to SC, ST, OBC and PwD categories will be available as per the extant national / State policy.
2. Admissions may be done on a rolling basis depending on the duration of the programmes to facilitate a steady stream of learners joining the college and moving out as trained work force to the job market, round the year and not just once in a year.
3. The applicants seeking re-entry into the college should get preference in admission over the new applicants.
4. Candidates are selected on the basis of Merit.

BVTGTR3: Fees and Scholarship:

1. Student fee should be decided as per the prevalent practice for fee fixation for aided courses.
2. Attempt should be made to recover part of the operating expenditure from the student fees.

BVTGTR4: Registration / Enrollment:

1. Every student admitted to the college for the programme must get enrolled to university within a month from the date of admission.

BVTGTR5: Semester Examinations

1. Candidates desirous of appearing at any Semester Examination shall have to submit applications in the prescribed form, through the designated authority on or before the prescribed date.
2. No candidate will be admitted to any Semester examination unless the Designated Authority i.e. the Head of the Department or Principal of the College certifies that:
 - (1) The candidate attended the course of study to the satisfaction of the designated authority.
 - (2) The candidate maintained a good conduct and character during the studies.
 - (3) The candidate maintained minimum 80% attendance in each semester

BVTGTR6: Evaluation

1. Appropriate mechanism for assessment of the learners' progress towards acquisition of knowledge and skill should be developed by the College. Partner industries should also be given a clear and well defined role in the assessment of the learners.
2. Practical or hands on skills should be given comparatively more weightage in the overall assessment plan.
3. The College should adopt and integrate the guidelines and recommendations of the respective Sector Skill Councils (SSCs) for the assessment and evaluation of the vocational component, wherever available. They should also involve the SSCs in the assessment process, wherever required. It applies to colleges, both Autonomous and non-Autonomous, and universities to maintain Occupational Standards and the fitness for the job.
4. Theory of each CORE paper will be evaluated for a maximum of 100 marks out of which, 40 marks shall be for Continuous evaluation (Exams) and 60 marks for the end semester examination. An end semester examination shall be of 2 hours duration.

BVTGTR7: rules for grading

1. One Credit would mean equivalent of 14-15 periods of 60 minutes each, for theory, workshops / labs and tutorials per semester.
2. For internship / field work, the credit weightage for equivalent hours shall be 50% of that for lectures / workshops

3. For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study shall be 50% of that for lectures / workshops
4. To pass a subject in any Semester a candidate must obtain a minimum of 40% of marks in each paper.
5. If a candidate fails in any subject, he has to reappear for that particular paper and pass. (That is, for example if candidate fails in midterm exam of a subject, he has to reappear for midterm of that subject.)
6. The performance of each candidate in all the subjects will be evaluated on 7- point scale in term of grades as follow:

Grading Scheme		%age according to Grade	Grade Points	Qualitative Meaning of Grade
1	A +	90-100	10.0	Outstanding
2	A	80-89	9.0	Excellent
3	A-	70-79	8.0	Very Good
4	B +	60 – 69	7.0	Good
5	B	50-59	6.0	Average
6	B-	40-49	5.0	Fair
7	F	Less Than 40	0	Fail
8	I	Incomplete		

BVTGTR8: performance index

1. The performance of a student in a semester is expressed in terms of the **Semester Performance Index (SPI)**.

SEMESTER PERFORMANCE INDEX (SPI)

The Semester Performance Index (SPI) is the weighted average of Course Grade Points obtained by the student in the semester. The Weights assigned to Course Grade Points are the Credits carried by the respective courses.

$$\begin{aligned}
 & \text{a. } g_1 c_1 + g_2 c_2 + \dots \\
 2. \text{ SPI} &= \frac{\dots}{\dots} \\
 & \text{a. } c_1 + c_2 + \dots
 \end{aligned}$$

Where, g_1, g_2, \dots are the Grade points obtained by the student in the Semester, for Courses carrying Credits c_1, c_2, \dots respectively.

2. The cumulative performance of a student at the end of the Semester / Course is expressed in terms of the **Cumulative Performance Index (CPI)**.

CUMULATIVE PERFORMANCE INDEX (CPI)

This index is defined as the weighted average of Course Grade Points obtained for all the weights for Theory Papers (Both Mid Term & End Term) and Practicals attempted since his admission to the program, where the weights are defined in the same way as in **Semester Performance Index (SPI)**.

3. If a failed student repeats a course, only the Grade Points obtained in the latest attempt shall be counted in the **Cumulative Performance Index**. Whenever the candidate clears the subject in the next semester examination, the total credits for that subject will be added to CPI.
4. For any Semester, the maximum marks for the Mid Term and End Term assessments are shown in the teaching and examination scheme. For the purpose of Mid Term assessment, tests, quizzes, assignments or any other suitable methods of assessment may be used by the department.

BVTGTR9: semester passing scheme

1. For each semester examination, a candidate will be considered as pass if he/she has secured "B-" or above grade in all the subject (s) and overall grade point 5.00 or above.
2. For each semester examination, a candidate will be considered as fail if he/she has secured "F" grade in any or all the subject (s).
3. If the candidate does not fulfill the subject requirements including requisite attendance percentage, he/she will be given I grade and the candidate will have to complete the course requirements before the commencement of the next End Semester examination. If the candidate does not clear I grade in any subject before the commencement of the next End Semester examination, he/she will be considered fail - F grade.
4. Candidate has to clear his / her 'F' grade or 'I' grade, if any, by the next End Semester examination.

BVTGTR10: semester promotion scheme

A candidate will be promoted to the subsequent Semester according to the following scheme:

1. A candidate would be granted admission to the Second Semester if and only if he/she has been granted Term for First Semester and has applied for the university examination.
2. A candidate would be granted admission to the Third Semester if and only if he/she has been granted Term for First & Second Semesters and has applied for the university examination.

3. A candidate would be granted admission to the Fourth Semester if and only if he/she has cleared all the subjects of First Semester. He /She will be permitted to pursue his/her study of Fourth Semester, provided his/her term for II & III Semesters is granted and has applied for the university examination.

Promotion Criteria

Semester	Condition(s) For Promotion
II	Grant of Term for Semester – I
III	Grant of Term for Semester I and Semester II
IV	Clearing of Semesters I completely and Grant of Term for Semester II & Semester III
V	Clearing of Semesters II completely and Grant of Term for Semester III & Semester IV
VI	Clearing of Semesters III completely and Grant of Term for Semester IV & Semester V

BVTGTR11: award of grading / division

No class/ division will be awarded to the students in the first 5 semesters. Divisions shall be awarded only at the end of Final Examinations on successful completion of all the Semesters. For awarding the degree at the end of the course, Cumulative Performance Index (CPI) of all the Mid Term and Final exams shall be taken in to consideration as per the following pattern of **Cumulative Performance Index (CPI)**:

S.N.	CPI	Division
1	7.50 to 10.00	FIRST Division with Distinction
2	6.50 to 7.49	FIRST Division
3	6.00 to 6.49	SECOND Division

BVTGTR12: award of degree

1. Award of Certificate, Advanced certificate, Diploma or Advanced Diploma, as the case may be, would depend on acquisition of requisite credits as prescribed by the certification body and not on the duration of the calendar time spent in pursuing the course.
2. The certificate shall mention the credits earned, course duration (in hours), and the curriculum covered. If the course is aligned with NVEQF / NSQF, the corresponding NVEQF / NSQF level should also be mentioned on the certificate.
3. Award of degree will be as follows

NVEQF Level	Skill Component Credits	General Education Credits	Normal calendar duration (post meeting the entry criterion)	Awards
7			Six semesters	Bachelor of Vocation
6	72	48	Four semesters	Advanced Diploma
5	36	24	Two semesters	Diploma
	18	12	One semester	Advanced Certificate
	9	6	Three Months	Certificate

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MODEL PAPER

Hemchandracharya North Gujarat University, Patan

Bachelor of Vocation

'Textile and ginning technology' Semester - I

External Examination, November, 2014

Subject:

Time: 2 hrs

Date

Maximum marks: 60

Q.1 Answer any 10 questions. Each question carries 1 mark

(10*1=10 Marks)

(OBJECTIVE QUESTIONS)

1. a) b) c) d)
2. Fill in the blank.
3. Short Questions / Definitions.
4. Match the following.
5. Assertion / Reason of
6. a) b) c) d)
7. Fill in the blank.
8. Short Questions / Definitions.
9. Match the following.
10. Assertion / Reason of True / False.

Q. 2 Answer any 5 questions. Each question carries 6 marks

(5*6=30 Marks)

(SHORT QUESTIONS)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Q.3 Answer any 2 question. The question carries 10 marks

(2*10=20 Marks)

(DESCRIPTIVE QUESTIONS)

- 1.
- 2.
- 3.

B.VOC TEXTILE AND GINNING TECHNOLOGY

SEMESTER I

COURSE CODE	COURSE TITLE	THEORY	PRACTICAL/FIELD	TOTAL
TGT101	COMUNICATION SKILL	2	0	2
TGT102	ENGINEERING WORK SHOP PRACTICE (MECHANICAL)	0	8	8
TGT103	SEED COTTON PROCESSING	4	0	4
TGT104	OPERATION OF SPINNING MACHINES	0	8	8
TGT105	SPINNING MACHINERY 1	2	2	4
TGT106	SPINNING PROCESS 1	2	2	4
	TOTAL	10	20	30

TGT101: COMMUNICATION SKILLS

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examination for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT101	COMUNICATION SKILL	2	0	2	40	60	00	00	100

Theory

Unit-1

English grammar- Parts of speech, articles, preposition, tenses, active and passive speech, direct and indirect speech.

Unit-2

Presentation techniques- Tips, Dos and don'ts of presentation, notice and placard presentations.

Unit-3

Written skills: Proposal, writing formats, report writing business letters, applications, covering letters, curriculum vitae designing, summary writing.

Unit-4

Listening- Phonetics and pronunciations (with the help of phonetics dictionary and with tapes from language laboratory).

Unit-5

Etiquettes and grooming.

Group discussion and extempore communication.

Interviews- Tips and model interviews (video shooting and display).

Reference Book:

1. Wren and Martin, English Grammar. Tapes from language laboratory, Hyderabad.

TGT102: ENGINEERING WORKSHOP PRACTICE(MECH)

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 80 marks and PA for 120 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT102	ENGINEERING WORK SHOP PRACTICE (MECHANICAL)	0	8	8	00	00	80	120	200

DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
UNIT – 1 INTRODUCTION TO WORKSHOP	1.1 Sketch general workshop layout. 1.2 Follow preliminary safety rules in workshop.	1.1 Workshop layout. 1.2 Importance of various sections/shops of workshop. 1.3 Types of jobs done in each shop. 1.4 General safety rules and work procedure in workshop.

<p>UNIT – 2</p> <p>FITTING</p>	<p>2.1 Select appropriate fitting tools for the required application.</p> <p>2.2 Prepare the simple jobs as per specification using fitting tools.</p>	<p>2.1 Sketch, specification and applications of fitting work holding tools-bench vise, V-block with clamp and C-clamp.</p> <p>2.2 Sketch, specification, material, applications and methods of using fitting marking and measuring tools-marking table, surface plate, angle plate, universal scribing block, try-square, scribe, divider, centre punch, letter punch, calipers, vernier caliper, etc.</p> <p>2.3 Types, sketch, specification, material, applications and methods of using of fitting cutting tools-hacksaw, chisels, twist drill, taps, files, dies.</p> <p>2.4 Types, sketch, specification, material, applications and methods of using of fitting finishing tools-files, reamers.</p> <p>2.5 Sketch, specification and applications of miscellaneous tools-hammer, spanners, screw drivers sliding screw wrench.</p> <p>2.6 Demonstration of various fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping.</p> <p>2.7 Preparation of simple and male- female joints.</p> <p>2.8 Safety precautions.</p>
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<p>UNIT – 3 TIN SMITHY</p>	<p>3.1 Select appropriate tin smithy tool for the required application. 3.2 Prepare the simple job as per specification using tin smithy tools.</p>	<p>3.1 Concept and conversions of SWG and other gauges in use.. 3.2 Use of wire gauge. 3.3 Types of sheet metal joints and applications. 3.4 Types, sketch, specification, material, applications and methods of using tin smithy tools-hammers, stakes, scissors/snips, etc. 3.5 Demonstration of various tin smithy tools and sheet metal operations such as shearing, bending and joining. 3.6 Preparation of tin smithy job. 3.7 Safety precautions.</p>
<p>UNIT – 4 CARPENTRY</p>	<p>4.1 Select appropriate carpentry tool for the required application. 4.2 Prepare the simple job as per specification using carpentry tools.</p>	<p>4.1 Types, sketch, specification, material, applications and methods of using of carpentry tools-saws, planner, chisels, hammers, pallet, marking gauge, vice, try square, rule, etc. 4.2 Types of woods and their applications. 4.3 Types of carpentry hardwares and their uses. 4.4 Demonstration of carpentry operations such as marking, sawing, planning, chiseling, grooving, boring, joining, etc. 4.5 Preparation of wooden joints. 4.6 Safety precautions.</p>
<p>UNIT – 5 PIPE FITTING</p>	<p>5.1 Select appropriate pipe fitting tool for the required application. 5.2 Prepare the simple job as per specification using pipe fitting tools.</p>	<p>5.1 Types, specification, material and applications of pipes. 5.2 Types, specification, material and applications of pipe fittings. 5.3 Types, specifications, material, applications and demonstration of pipe fitting tools. 5.4 Demonstration of pipe fitting operations such as marking, cutting, bending, threading, assembling, dismantling, etc. 5.5 Types and application of various spanners such as flat, fix, ring, box, adjustable, etc. 5.6 Preparation of pipe fitting jobs. 5.7 Safety precautions.</p>
<p>UNIT – 6 METAL JOINING</p>	<p>6.1 Select appropriate equipment and consumables for required application. 6.2 Prepare the simple jobs as per specification using proper metal joining and cutting method.</p>	<p>6.1 Types, specification, material and applications of arc welding transformers. 6.2 Types, specification, material and applications of arc welding accessories and consumables. 6.3 Demonstration of metal joining operations-arc welding, soldering and brazing. Show effect of current and speed. Also demonstrate various welding positions. 6.4 Demonstrate gas cutting operation. 6.5 Preparation of metal joints. 6.6 Safety precautions.</p>

UNIT - 7	Basic machine Lathe machine Drilling machine Shaper machine Milling machine	7.1 Job on lathe 7.2 Job on Drilling machine 7.3 job on shaper & milling machine.
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SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

S. No.	Unit No.	Practical
1	I	Prepare carpentry and fitting shop layout.
2	II	Demonstrate use of different fitting tools –like work holding, marking, measuring, cutting, finishing and miscellaneous. Student will also prepare the report with sketch, specifications and applications of fitting tools demonstrated.
3	II	Prepare one simple and another male-female type fitting jobs as per given drawings- 2 jobs.
4	III	Demonstrate use of different tin smithy tools. Student will also prepare the report with sketch, specifications and applications of tin smithy tools demonstrated.
5	III	Prepare one tin smithy job as per drawing having shearing, bending, joining and riveting.
6	IV	Demonstrate use of different carpentry tools. Student will also prepare the report with sketch, specifications and applications of carpentry tools demonstrated.
7	IV	Prepare two wooden joints as per given drawings.
8	V	Demonstrate use of different pipe fitting tools. Student will also prepare the report with sketch, specifications and applications of pipe fitting tools demonstrated.
9	V	Prepare pipe fitting jobs as per drawings-two jobs.
10	VI	Demonstrate use of different welding transformers and consumables. Also demonstrate arc welding, gas cutting, soldering and brazing operations. Student will also prepare the report with sketch, specifications and applications of fitting tools demonstrated.
11	VI	Prepare jobs using arc welding, gas cutting, spot welding, brazing and soldering process- three jobs.

REFERENCE BOOKS:

Sr. No	Title of Books	Author	Publication
1	Mechanical workshop practice.	K.C. John	PHI.
2	Workshop familiarization.	E.Wilkinson	Pitman engineering craft series.
3	Workshop Technology-I.	Hazra and Chaudhary	Media promoters & Publisher private
4	Workshop Technology-I.	W.A. J. Chapman	Taylor & Francis.
5	Comprehensive Workshop Technology (Manufacturing	S.K. Garg	Laxmi publications.
6	I.T.B. Handbook.	-	Engineering industry Training Board.
7	Workshop practice	K.Venkata Reddy	B.S.Publications.

List of Software/Learning Websites:

- <http://www.abmtools.com/downloads/Woodworking%20Carpentry%20Tools.pdf>
- <http://www.weldingtechnology.org>
- <http://www.newagepublishers.com/samplechapter/001469.pdf>
- <http://www.youtube.com/watch?v=TeBX6cKKHWY>
- <http://www.youtube.com/watch?v=QHF0sNHnttw&feature=related>
- <http://www.youtube.com/watch?v=Kv1zo9CAxt4&feature=relmfu>
- <http://www.piehtoolco.com>
- <http://sourcing.indiamart.com/engineering/articles/materials-used-hand-tools/>

TGT103:SEED COTTON PROCESSING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examixnation for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT103	SEED COTTON PROCESSING	4	0	4	40	60	00	00	100

Topic 1: Selection of Seed cotton

- 1.1 Quality of Fibers
- 1.2 Level of Moisture
- 1.3 Appearance of Kapas Bolls
- 1.4 Presence of Contamination

Topic 2: Heaping of Seed Cotton

- 2.1 Method of Heaping
- 2.2 Means to prepare Heap of Seed Cotton
- 2.3 Size of Heap
- 2.4 Storage of Heap

Topic 3: Transportation of Seed Cotton

- 3.1Types of Transportation
- 3.2 Principles of Transportation Systems
- 3.3 Comparison of Various Transportation Systems
- 3.4 Effect of Transportation System on Cotton Quality

Topic 4: Cleaning of Seed Cotton

- 4.1 Type of Cleaning Systems
- 4.2 Effect of Cleaning of Seed Cotton on Ginning Performance
- 4.3 Quality Improvement with Use of Cleaning System

Refrance Book:

Kapas Storage and Preparation at Ginning

TGT104:OPERATION OF SPINNING MACHINES

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examixnation for 50 marks.

Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT104	OPERATION OF SPINNING MACHINES	0	8	8	00	00	80	120	200

Practical

Topic 1: Blow Room and Carding

- 1.1 Methods of Mixing Fibers
- 1.2 Running of Blow Room Beaters
- 1.3 Changing of Carding Cans
- 1.4 Running of Carding Systems
- 1.5 Cleaning of Machinery

Topic 2: Drawing and Super Lap Former Machinery

- 2.1 Changing of Sliver Cans
- 2.2 Piecing of Sliver
- 2.3 Cleaning of Drafting Zones / Critical Parts
- 2.4 Stating of Machinery

Topic 3: Combing

- 3.1 Placing of Comber Laps
- 3.2 Piecing of Combing Web / Sliver Breaks
- 3.3 Cleaning of Critical Parts
- 3.4 Changing of Comber Cans

Topic 4: Speed / Ring Frames / Winding Machinery

- 4.1 Creeling of Sliver Cans / Roving Bobbins / Yarn Bobbins
- 4.2 Piecing of Sliver / Roving / Yarn Threads
- 4.3 Doffing of Roving Bobbins / Yarn Bobbins
- 4.4 Cleaning of Critical Parts
- 4.5 Running of Sensors

Reference book:

Cotton spinning process

TGT105:SPINNING MACHINERY 1

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks.

Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT105	SPINNING MACHINERY 1	2	2	4	30	50	40	80	200

Topic 1: Blow Room and Carding for Fibers Cleaning

1.1 Types of Machineries and Their Function

1.2 Critical Speed Parameters

1.3 Critical Setting Parameters

1.4 Norms on Machinery Performance

1.5 Precaution to Prevent Damages to Important Parts of Machinery **Topic 2: Drawing Machinery**

for Fibers Parallelization/Leveling of Material Weight

2.1 Types of Machineries and Their Function

2.2 Parameters Affecting Fibers Parallelization

2.3 Calculations to find out Weight of Material

2.4 Effect of Parallelization on Noil Extraction

Topic 3: Lap Formation and Combing for Removal of Short Fibers/ Entanglements

3.1 Functions of Machinery

3.2 Critical Settings/Speed Related Parameters

3.3 Method to find out Level of Comber Noil

3.4 Precaution to Maintain Condition of Critical Parts

Practical:

1. Measurement of speed of critical parts of blow room to winding machines.
2. Measurement of critical settings of blow room to winding machines.
3. Measurement of rollers' diameter of drafting systems.
4. Finding out yarn content on ring bobbins and winding cones.

Reference book:

Spinning machineries by LMW

TGT 106:SPINNING PROCESS 1

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT106	SPINNING PROCESS 1	2	2	4	30	50	40	80	200

Topic 1: Principles of Spinning

- 1.1 Cleaning of Cotton Fibers
- 1.2 Parallelization of Fibers
- 1.3 Sliver Doublings and Auto Leveling to Maintain Constant Weight of Material
- 1.4 Removal of Short Fibers and Fiber Entanglements / Neps
- 1.5 Attenuation of Material
- 1.6 Twisting of Fibers
- 1.7 Spinning of Fibers and Yarn Winding

Topic 2: Cotton Spinning Process

- 2.1 Carded Material Process
- 2.2 Combed Material Process
- 2.3 Blended Yarn Process
- 2.4 Limitations of Carded Material Process
- 2.5 Benefits of Combed Material Process

Topic 3: Fiber Cleaning and Neps Generation / Removal

- 3.1 Principles of Fiber Cleaning
- 3.2 Methods of Fiber Cleaning
- 3.3 Types of Waste in Spinning Machinery
- 3.4 Cleaning Efficiency of Machinery
- 3.5 Principles of Fiber Neps Generation / Removal
- 3.6 Causes and Remedies to Minimize Neps Level in Material

Practical:

1. Identify parameters affecting cleaning of fibers.
2. Identify parameter affecting fiber separation.
3. Measurement of yarn quality parameters using carding vs combing processes.
4. Finding out effect of critical settings and process affecting yarn realization.

Reference book:

Spinning process by textile association

B.VOC TEXTILE AND GINNING TECHNOLOGY

Semester II

COURSE CODE	COURSE TITLE	THEORY	PRACTICAL/FIELD	TOTAL
TGT201	ENGINEERING PHYSICS	2	2	4
TGT202	ENGINEERING WORK SHOP PRACTICE (ELECTRICAL)	0	6	6
TGT203	GINNING TECHNOLOGY 1	4	0	4
TGT204	SPINNING PROCESS 2	4	0	4
TGT205	GINNING PRACTICE	0	6	6
TGT206	SPINNING PRACTICE	0	6	6
	TOTAL	10	20	30

TGT201: ENGINEERING PHYSICS

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT201	ENGINEERING PHYSICS	2	2	4	30	50	40	80	200

DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I	1.1 Explain Physical Quantities and their units. 1.2 Measure given dimensions by using appropriate instruments accurately. 1.3 Calculate error in the measurement 1.4 Solve numerical based on above outcomes	<u>SI Units & Measurements</u> 1.1 Need of measurement and unit in engineering and science, definition of unit, requirements of standard unit, systems of units-CGS, MKS and SI, fundamental and derived quantities and their units 1.2 Least count and range of instrument, least count of vernier caliper, micrometer screw gauge 1.3 Definition of accuracy, precision and error, estimation of errors -absolute error, relative error and percentage error, rules and identification of significant figures. (Numerical on above topics)
Unit– II	2.1 List Newton's laws of motion 2.2 Differentiate among various forces in nature 2.3 Define inertia, momentum and impulse of force 2.4 State Newton's laws of motion 2.5 State law of conservation of momentum 2.6 Solve numerical problems based on above topics	<u>Force and Motion:</u> Recapitulation of equations of motion, Newton's 1st law of motion, Force, basic forces in motion, gravitational force, electrostatic force, electromagnetic force, nuclear force, Inertia, types of inertia (inertia of rest, inertia of motion, inertia of direction), Momentum, Newton's 2nd law of motion, measurement of force using second law, simple problems on $F = ma$ and equations of motion, Impulse of force, Impulse as the product of force and time, impulse as the difference of momentum, examples of impulse, simple problems on impulse, Newton's 3rd law of motion and its examples. Law of conservation of momentum, Statement, simple problems (Numerical on above topics)
Unit– III	3.1 Comprehend the concept of elasticity and Define Stress, Strain and Elastic limit.	<u>General properties of matter</u> 3.1 Elasticity Deforming force, restoring force, elastic and plastic

Unit	Major Learning Outcomes	Topics and Sub-topics
	3.2 State Hooke's law. 3.3 Explain the term elastic fatigue. 3.4 Distinguish between Streamline and Turbulent flow 3.5 Define coefficient of viscosity. 3.6 Apply the principle of viscosity in solving problems. 3.7 State significance of Reynold's number 3.8 Explain terminal velocity. 3.9 Mention Stoke's formula. 3.10 Explain the effect of temperature on viscosity 3.11 Comprehend the phenomenon of surface tension and its applications. 3.12 Define surface tension. 3.13 Explain angle of contact and capillarity. 3.14 Solve problems related to surface tension.	body, stress and strain with their types. elastic limit, Hooke's law, Young's modulus, bulk modulus, modulus of rigidity and relation between them (no derivation), stress strain diagram. behavior of wire under continuously increasing load, yield point, ultimate stress, breaking stress, factor of safety. 3.2 Surface Tension. Molecular force, cohesive and adhesive force, Molecular range, sphere of influence, Laplace's molecular theory, Definition of surface tension and its S.I. unit, angle of contact, capillary action with examples, shape of meniscus for water and mercury, relation between surface tension, capillary rise and radius of capillary (no derivation), effect of impurity and temperature on surface tension 3.3 Viscosity Fluid friction, viscous force, Definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its S.I. unit, streamline and turbulent flow with examples, critical velocity, Reynolds's number and its significance, free fall of spherical body through viscous medium (no derivation), up thrust force, terminal velocity, Stokes law (statement and formula). (Numericals on Above topics)
Unit– IV	4.1 Distinguish between Heat and Temperature. 4.2 Explain modes of Transmission of heat and their applications. 4.3 Define heat capacity and specific heat of substances. 4.4 Explain temperature 4.5 List various temperature scales and convert among temperatures	<u>Heat Transfer</u> 4.1 Three modes of transmission of heat -conduction, convection and radiation, good and bad conductor of heat with examples, law of thermal conductivity, coefficient of thermal conductivity and its S.I. unit. 4.2 Heat capacity and specific heat of materials 4.3 Celsius, Fahrenheit and Kelvin temperature scales and their conversion formulae (Numericals on above topics)
Unit– V	5.1 Comprehend the concept of wave motion 5.2 Distinguish between transverse and longitudinal waves. 5.3 Define period, frequency, amplitude and wavelength 5.4 Explain principle of superposition of waves 5.5 Define resonance 5.6 Explain resonance. 5.7 State Formula for velocity of sound in air 5.8 Comprehend the Importance of Reverberation 5.9 State Sabine's formula and Factors affecting Reverberation time 5.10 Explain ultrasonic waves. Mention applications of	<u>Waves and Sound</u> Definition of wave motion, amplitude, period, frequency, and wavelength, relation between velocity, frequency and wavelength, longitudinal and transverse wave, principle of superposition of waves, definition of resonance with examples, Formula for velocity of sound in air and various factors affecting it Ultrasonic Waves Definition, Properties of ultrasonic waves Uses of ultrasonic waves. Acoustics Of Building Importance of Reverberation, Reverberation time, Optimum time of Reverberation, Coefficient of absorption of Sound, Sabine's formula for Reverberation time, Factors affecting Reverberation time and acoustics of building. (Numericals on above topics)

Unit	Major Learning Outcomes	Topics and Sub-topics
	ultrasonic waves	
Unit- VI	6.1 State Properties Of Light 6.2 Define various phenomena of light 6.3 State Snell's law of refraction. 6.4 Explain importance and list applications of nanotechnology in engineering field	<u>Light and Nanotechnology</u> Properties Of Light, Electromagnetic spectrum, Reflection, refraction, snell's law, diffraction, polarization, interference of light, constructive and destructive interference (Only definitions), physical significance of refractive index, dispersion of light Introduction to Nanotechnology (Numericals on above topics)
Unit – VII	7.1 Define radio activity 7.2 Distinguish between Natural & Artificial radioactivity 7.3 State relation between Half Life, Average Life & Decay Constant. 7.4 Describe properties of Alpha, Beta and Gamma rays.	<u>Radioactivity</u> 7.1 Radioactivity Definition, Natural & Artificial radioactivity, Units and Laws of Radioactivity, Half Life, Average Life & Decay Constant. 7.2 Radioactive Rays Properties and uses of alpha particles, beta particles and gamma rays (Numericals on Above topics)

SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

S. No.	Unit No.	Experiment /Practical Exercises
1	1	Linear Measurement by Vernier calipers
2	1	Linear Measurement by Micrometer screw
3	3	Measurement of Surface tension
4	3	Measurement of Viscosity
5	3	Measurement of Young's Modulus
6	3	To determine Force constant with the help of periodic time of oscillations of spring
7	3	Measurement of specific gravity
8	6	To calculate refractive index of material of prism using spectrometer device.
9	4	Joule's mechanical equivalent of heat
10	4	Measurement of co-efficient of thermal conductivity
11	5	To study the relation between the length of a stretched string and the tension in it with the help of a sonometer.
12	6	To calculate SA/V ratio of simple objects to understand nanotechnology

Minimum 8 experiments/practical exercises should be performed from the above list

Hours distribution for Physics Experiments :

Sr. No.	Description	Hours

1	An introduction to Physics laboratory and its experiments (for the set of first four experiments)	02
2	Set of first four experiments	08
3	An introduction to experiments (for the set of next four experiments)	02
4	Set of next four experiments	08
5	Mini project	06
6	Viva and Submission	02

No.	Author	Title of Books	Publication
1	Sears And Zemansky	University Physics	Pearson Publication
2	Paul G Hewitt	Conceptual Physics	Pearson Publication
3	Halliday & Resnick	Physics	Wiley India
4	G Vijayakumari	Engineering Physics, 4e	Vikas-Gtu Students' Series
5	Arvind Kumar & Shrish Barve	How And Why In Basic Mechanics	Universities Press
6	Ncert	Physics Part 1 And 2	Ncert
7	Giancoli	Physics For Scientists And Engineers	
8	H C Verma	Concepts Of Physics	
9	Gomber & Gogia	Fundamentals Of Physics	Pradeep Publications, Jalandhar

B. List of Major Equipment/ Instrument

- 1.Redwood's Viscometer
- 2.Digital Vernier Calipers And . Digital Micrometer Screw Guage
- 3.Digital Travelling Microscope
- 4.Joule's Calorimeter
- 5.Searle's Thermal Conductivity Apparatus
- 6.Visible Light Spectrometer

C. List of Software/Learning Websites

1. www.physicsclassroom.com
2. www.physics.org
3. www.fearofphysics.com
4. www.sciencejoywagon.com/physicszone
5. www.science.howstuffworks.com

TGT202:ENGINEERING WORK SHOP PRACTICE (ELECTRICAL)

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 40 marks and PA for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT202	ENGINEERING WORK SHOP PRACTICE (ELECTRICAL)	0	6	6	00	00	40	60	100

DETAILED COURSE CONTENTS

Unit	Major Learning	Topics and Sub-topics
Unit- I Electrical Tools	1a. Use various electrical tools and measuring instruments.	1.1 Pliers, nose plier, cutter, screw driver, tester, test lamp etc. Ammeter, voltmeter, wattmeter, clip on meter, Multimeter, Megger, etc.
Unit- II Cables and	2a. Select different types of wires, cables, light	2.1 Single core cable, multicore cable, single strand wire, multi strand wire, shielded wire , different
Unit- III Resistor	3a. Select/identify different types of resistors.	3.1 Rheostat, wire wound resistor, Carbon film resistor, Carbon composition resistor, fixed
Unit-IV Earthing and Electrical Safety	4a. Undertaking pipe earthing.	4.1 Earthing, pipe earthing, plate earthing, Electrical safety tools Electrical safety rules , I.E. rules for electrical hazards and accidents
Unit-V Electrical wiring	5a.Types of wiring and wiring circuit	5.1 Types of wiring and system,different wiring circuits.

SUGGESTED LIST OF EXERCISES/PRACTICALS

The experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the above mentioned expected competency.

Sr. No.	Unit No.	Practicals / Exercises
1	I	Identify various tools used for wiring.
2	I	Identify the symbols used in electrical circuit diagrams.
3	I	Identify and connect various electrical measuring instruments and
4	I	Use common testing instruments used in electrical workshops: 1: Test lamp. 2: line tester. 3: Multimeter. 4: Clamp-on
5	I	Connect different domestic appliances to power supply and measure current drawn by them using 1)Ammeter. 2)Tong
6	I	Identify different types of domestic wirings.
7	II	Identify and specify different types of wires, cables, cable joints
8	II	Identify different types of light sources, open circuit, closed circuit
9	III	Identify and specify different types of switches used for different
10	III	Identify and specify different types of sockets and plugs used for
11	III	Know the working of various electrical circuit protective devices
12	I & III	Prepare a meter board for lighting and power installation using MCB, energy meter, fuse unit, DP switch, indicators and bus
13	IV	Identify and specify different types of conducting, insulating materials, resistors as per standard color code practice.
14	IV	Conduct mock artificial respiration and first aid exercises to learn
15	IV	Undertake earthing practice (good demonstration)
16	V	Carry out following wirings a. Tube light wiring b. Stair case wiring c. Godown wiring d. parallel loop wiring

SUGGESTED LEARNING RESOURCES

A. List of Books

S.No.	Author	Title of Books	Publicatio
1	Mithal, G.K.	Electrical Engineering Materials	Khanna Publication ,2011
2	Gupta, J.B. , & Gupta, Renu	Electrical engineering materials & semiconductor devices	S.K. Kataria & sons, 2012
3	Singh, Surjit	Electrical engineering drawing	S.K. Kataria & sons, 2012
4	Bhatia, S.L.	Handbook of Electrical Engineering	Khanna Publication ,2012
5	Uppal, S.L. & Garg ,G.C.	Electrical Wiring, Estimating and Costing	Khanna Publication ,2012

B. List of Major Equipment/ Instrument

- i. Various tools for wiring such as wire stripper, bearing puller, etc.
- ii. Various electrical measuring instruments such as digital and analogue multimeters, ammeters, voltmeters, wattmeters, frequency meters, phase sequence meters, tong tester, etc.
- iii. Various safety devices for protection of electrical installation, earthing rods, megger, insulation tester, etc..
- iv. Various safety devices used for first aid and electric fire hazards. v. Soldering kit.
- vi. Different types of cables, wires, switches, light sources, resistors, capacitors, inductors, insulating and conducting materials, MCBs, ELCBs, etc.
- vii. Various domestic appliances (e.g. fan, heater, electric iron, geyser etc.)
- viii. Various electrical power supplying equipments (e.g. transformer, variac, d.c.power supply etc)

C. List of Software/Learning Websites

- i. http://en.wikipedia.org/wiki/Electrical_wiring
- ii. <http://www.kpsec.freeuk.com/components/switch.htm> iii.
<http://home.howstuffworks.com/electrical-tools.htm>

TGT203:GINNING TECHNOLOGY 1

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examixnation for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT203	GINNING TECHNOLOGY 1	4	0	4	40	60	00	00	100

Topic 1: Definition of Ginning and its yield

- 1.1 Quality of various kapas bolls and their size
- 1.2 Kapas grading and heaping
- 1.3 Moisture in kapas
- 1.4 Attachment Strength of fibers to seeds
- 1.5 Presence of immature seeds / clusters in kapas
- 1.6 Ginning %

Topic 2: Ginning Systems and Working of Roller Gin Machine / Maintenance

- 2.1 Development of Roller gin machine and its maintenance
- 2.2 Gin machine structure, its installation & settings
- 2.3 Kapas feeder and function of beater
- 2.4 Care for fixed knife and moving knife
- 2.5 Size and numbers of roller grooves
- 2.6 Necessity of gears in roller ginning machine

Topic 3: Cleaning Systems for Kapas and Ginned Cotton

- 3.1 Pre cleaning systems / machines
- 3.2 Structure of pre cleaning machines, their settings, effect of various speeds etc.
- 3.3 Systems for cleaning of ginned cotton fibers
- 3.4 Working of post cleaning machines and effects of cleaning on fiber properties

Reference book:

Ginning technology by CIRCOT

TGT204:SPINNING PROCESS 2

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examination for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT204	SPINNING PROCESS 2	4	0	4	40	60	00	00	100

Topic 1: Fibers Parallelization and Doubling of Material

- 1.1 Principles of Fibers Parallelization / Material Doublings
- 1.2 Methods of Fibers Parallelization
- 1.3 Machinery / Process Parameters Affecting Level of Fibers Parallelization
- 1.4 Effect of Fibers Parallelization on Removal Efficiency of Short Fibers / Fibers Entanglements
- 1.5 Systems for Doubling of Material
- 1.6 Function of Auto Leveler
- 1.7 Wrapping of Material at Different Stages of Spinning Process

Topic 2: Attenuation of Material

- 2.1 Methods / Systems for Attenuation of Material
- 2.2 Principles of Drafting
- 2.3 Parameters Affecting Level Attenuation of Material
- 2.4 Effect of Attenuation on Productivity and Quality of Yarn

Topic 3: Yarn Spinning and its Winding

- 3.1 Twisting Method to Convert Fibers into Yarn Thread
- 3.2 Factors Affecting Conversion of Fibers into Yarn
- 3.3 Critical Machinery Parameters for Yarn Preparation
- 3.4 Importance of Winding and its Method
- 3.5 Effect of Winding on Yarn Quality

Practical:

1. Identify effect of speed and setting related parameters affecting fibrous neps and short fiber levels.
2. Measurement of draft levels of drawing / speed frame and ring frame.
3. Identifying causes affecting variation in yarn twist.

Reference book:

Spinning process by SITRA

TGT205: GINNING PRACTICE

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 40 marks and PA for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT205	GINNING PRACTICE	0	6	6	00	00	40	60	100

List of Practical

1. Checking performance of kapas transportation system. To study air pressure, revolutions of suction fans, diameter & length of ducting pipe etc.
2. Performance checking of pre ginning cleaner in terms of removal of immature bolls. To observe effects of its rollers' speed, settings between various parts, condition of parts on fibers quality etc.
3. To observe quantity of kapas from heap to pre ginning cleaner to auto feeder of roller gin machine. Efficiency of labour / machine operators.
4. Checking of production of double roller gin machines and their ginning %. Speed / settings related parameters affecting production and ginning%.
5. To study the effect of condition of various critical parts on performance of roller gin machine.
6. To check the performance of ginned lint transportation system. Observing effects of air pressure, shape / position of mouth piece, stationery condenser, ducting diameter / fan RPM etc.
7. To study cleaning efficiency of post ginning cleaner. Performance checking of post ginning machine considering type of trash present in the cotton.
8. Performance checking of moisture system at ginning. Level of moisture / qualityTopic of moisture in cotton.
9. To observe bale size, weight, packing etc. as per ISI norms

TGT206:SPINNING PRACTICE

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 40 marks and PA for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT206	SPINNING PRACTICE	0	6	6	00	00	40	60	100

1. Find out cleaning efficiency of blow room and carding machineries
2. Neps generation level at blow room
3. Fibers rupture intensity at blow room
4. Neps reduction efficiency at carding
5. Waste level at blow room and carding
6. Wrapping of slivers of carding / drawing machines
7. Measurement of comber lap weight
8. Noil level at combing
9. Combing efficiency in terms of removal of short fibers / neps
10. Setting of sliver hank at finisher draw frame
11. Breakage of roving and yarn threads
12. Find out roving stretching
13. Measurement of Drafting roller pressure / roller eccentricity
14. Measurement of suction pressure at ring frame
15. Weight of winding cone / moisture level in cones

Data entry on production / efficiency of all spinning machineries

B.VOC TEXTILE AND GINNING TECHNOLOGY

Semester III

COURSE CODE	COURSE TITLE	THEORY	PRACTICAL/FIELD	TOTAL
TGT301	COTTON QUALITY AND ITS TESTING	2	6	8
TGT302	HUMAN RESOURCE MANAGEMENT	2	0	2
TGT303	GINNING TECHNOLOGY 2	2	2	4
TGT304	SPINNING MACHINERY 2	2	2	8
TGT305	COTTON TESTING PRACTICE	0	8	8
TGT306	ENVIRONMENT CONSERVATION & HAZARD MANEGMENT	4	0	4
	TOTAL	12	18	30

TGT301:COTTON QUALITY AND ITS TESTING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT301	COTTON QUALITY AND ITS TESTING	2	6	8	30	50	40	80	200

Topic 1: Quality Parameters of Cotton

- 1.1 Need of cotton quality
- 1.2 Types of cotton on basis of its quality
- 1.3 Length, thickness, strength of cotton fibers and presence of trash

Topic 2: Fiber Length of Cotton

- 2.1 Importance of length of fibers to prepare count of yarn
- 2.2 Testing systems to measure length of fibers
- 2.3 Parameters of fiber length
- 2.4 Definition of short fibers and method to find out it
- 2.5 Calculation to find out length uniformity of fibers

Topic 3: Fiber Fineness and Maturity

- 3.1 Importance of fiber fineness for preparation of yarn count
- 3.2 Information on fiber fineness and its testing equipments
- 3.3 Definition of fiber maturity and its importance
- 3.4 Relationship between fiber fineness and maturity and their testing systems

Topic 4: Trash in Cotton

- 4.1 Type of trash particles
- 4.2 Trash content affecting yarn realization and quality
- 4.3 Testing equipments for checking the trash content

Topic 5: Cotton Grade and Fiber Neps

- 5.1 Testing systems to measure cotton grade
- 5.2 Causes to deteriorate the cotton grade and its remedies

5.3 Definition of fiber neps and importance of its reduction

Topic 6: Fiber Strength

6.1 Importance of fiber strength to get better strength of yarn

6.2 Parameters affecting strength of fibers

6.3 Testing instruments for measuring fiber strength

6.4 Importance of moisture to maintain the fiber strength

Practical:

1. Compare of fiber properties between bales and lots.
2. Calculation to find out variability in fiber properties.
3. Find out level of neps and short fiber at each stage of machinery.
4. Finding of hank of sliver and roving materials.
5. Observing effect of various hank levels on quality of final product.
6. Identifying effect of cotton maturity and fiber fineness.
7. Observing effect of cotton trash on final quality product.

Reference:

Cotton quality by USTER

TGT302:HUMAN RESOURCE MANAGEMENT

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examination for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES	PA	
TGT302	HUMAN RESOURCE MANAGEMENT	2	0	2	40	60	00	00	100

COURSE DETAILS

Unit	Major Learning Outcomes (Course Outcomes in Cognitive Domain according to NBA terminology)	Topics and Sub-topics
Unit I Introduction	1.a Appreciate importance of human resource	1.1 Need and scope of human resource management in industrial environment. 1.2 Impact of human factors on productivity and industrial harmony. 1.3 Importance of providing need based training to the man power. 1.4 Qualities of a good supervisor.
Unit II Human needs, relations and values	2.a Identify human motivations.	2.1 Importance of human resources in Indian philosophy. 2.2 X and Y theory. 2.3 Maslow's hierarchy, its importance in managing human resources.
	2.b Appreciate values and ethics for relationships.	2.4 Need of human relations and human values in the industry, inter department and intra department. 2.5 Good relations with the suppliers and clients. 2.6 Desirable human values and their importance including ethics and morale values.
Unit III Behavioural dynamics	3.a Analyse self for interpersonal behaviour.	3.1 Need for interpersonal competence. 3.2 Determinants of interpersonal behaviour. 3.3 Concept of interpersonal orientation and attractions and its importance in human behaviour.

	3.b Develop team spirit and positive attitude.	3.4 Concept of group dynamics. 3.5 Dynamics of group formation. 3.6 Types of groups. 3.7 Role of teams in an organization. 3.8 Desirable characteristics of a team member. 3.9 Concept & importance of positive attitude and openness of mind. 3.10 Do's and don'ts for developing positive attitude. 3.11 Importance of mental health.
Unit IV Leadership Development	4.a Use leadership qualities. 4.b Develop subordinates by motivations & training. 4.c Develop decision	4.1 Various definitions of leadership. 4.2 Situational approach to leadership. 4.3 Quality of a good leader. 4.4 Power influence and compliance. 4.5 Influence of Leadership. 4.6 Techniques to deal people effectively. - case studies.

Unit	Major Learning Outcomes (Course Outcomes in Cognitive Domain according to NBA terminology)	Topics and Sub-topics
	making ability.	4.7 Importance of resource management (human, machine, material, method, money, time (moment), information (message)). 4.8 Need, importance & types of organisational training. 4.9 Need and importance of motivations. 4.10 Changing role of supervisor as facilitator & motivator. 4.11 Need, importance and use of guidance, mentoring, coaching and counselling. 4.12 Importance of problem solving and decision making in context of productivity, quality, cost consciousness, human relations and goal achievement. 4.13 Factors affecting decision making. 4.14 Types and process of decision making. 4.15 Make the decisions for given case/situation. - case studies.

Unit V Change and stress management.	5.a Identify need for change and barriers to change. 5.b Suggest strategies for any change. 5.c Resolve conflicts.	5.1 Need for change. 5.2 Barriers to change. 5.3 Strategies and tools to manage change.(Effective implementation and management of change). - case studies. 5.4 Trade unions and their objectives. 5.5 Constructive role of trade unions in goal setting, achievement and change management. 5.6 Causes of conflicts and techniques to resolve conflicts - case studies.
	5d. Analyse stress situation 5e. Manage stress.	5.7 Concept of stress. 5.8 Causes of stress. 5.9 Stress measuring techniques. 5.10 Need for relieving stress. 5.11 Techniques to manage the stress- case studies. 5.12 Self-management techniques

LEARNING RESOURCES

List of Books

Sr. No.	Title of Books	Author	Publication
1.	Managing people at work.	Ahuja, Jain & Chhabra.	Dhanpatrai and Sons.
2.	Human Resource Management	D.R.Patel, Y.R.Joshi	Atul Prakashan.
3.	Human Resource Management	Biswajeet Pattanayak	PHI
4.	Human Resource Management	K. Aswathappa	Tata McGraw Hill
5.	Human Resource Management	V. S. P. Rao	
6.	Seven Habits of successful people	Stephen R. Covey	Free Press
7.	Competency Framework for HRM	B.L. Gupta	Concept Publishing Company, New Delhi, First Edition 2011
8.	Designing and Managing human resources systems.	Pareek, Udai and Rao T.V.	Oxford and TBH Publishing Co., New Delhi, 1981.
9.	Behavioural processes in organisation.	Pareek, Udai and Rao T.V.	Oxford and TBH Publishing Co., New Delhi, 1981.

List of Software/Learning Websites:

- a. www.cipd.co.uk/NR/rdonlyres/29D9D26D.../9781843982654_sc.pdf
- b. www.slideshare.net/kumaravinash23/chapter-12-2634971
- c. www.tutor2u.net/business/people/motivation_theory_mcgregor.asp
- d. www.mindtools.com
- e. kalyan-city.blogspot.com/.../maslow-hierarchy-of-needs-theory-of.html
- f. www.enotes.com > Health
- g. www.youtube.com/watch?v=RwZ4-GTSNUI
- h. www.entrepreneur.com/article/204248
- i. ceocommunity.ning.com/forum/attachment/download?id...
- j. www.facultyfocus.com/...leadership/improve-your-decision-making-skill...
- k. www.nap.edu/catalog.php?record_id=13188
- l. nearyou.gwu.edu/hrdl-hr/hrd-ld-hr_brochure.pdf
- m. www.hrinz.org.nz/Site/Resources/...Base/.../Change_Management_.aspx
- n. <http://www.youtube.com/watch?v=OD6-dBymmjk>
- o. <http://www.youtube.com/watch?v=SJR-MRVd1ok>
<http://www.youtube.com/watch?v=pbxpg6D4Hk8>

TGT303: GINNING TECHNOLOGY 2

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT303	GINNING TECHNOLOGY 2	2	2	4	30	50	40	80	200

Topic 1: Cotton Transportation at Ginning

- 1.1 Cotton transportation systems by air and belt
- 1.2 Advantages / disadvantages with use of cotton transportation systems
- 1.3 Cotton quality improvement with the use of transportation systems
- 1.4 Structure of various suction fans, piping and their installation
- 1.5 Systems for collecting heavy particles from cotton
- 1.6 Storage of cotton / seeds

Topic 2: Systems on Cotton Packing

- 2.1 Types of cotton pressing systems
- 2.2 Automatic bale pressing system
- 2.3 Packing materials for cotton bales
- 2.4 Maintenance on baling press machine

Topic 3: Parameters Affecting Characteristics of Cotton Fibers

- 3.1 Preparation before processing of cotton at ginning
- 3.2 Speeds of cotton transportation systems / angle of ducting and size of piping
- 3.3 Quality improvement in kapas with use of pre cleaning systems
- 3.4 Effect of condition of parts of roller gin machine on fiber quality
- 3.5 Effect of moisture on cotton, its level / control

Topic 4: Cotton Marketing

4.1 Cotton Price Information

4.2 Cotton Future and options

4.3 Cotton Export / Import

4.4 Precision Marketing

Practical:

1. Observing effect of various transportation systems on cotton quality.
2. Identifying effect of cleaning system on final bale quality.
3. Checking of speed and settings of ginning machinery effecting fiber rupture and naps generation.
4. Checking effect of different moisture contain of laps on ginning performance.
5. Weight of bales to find out variability within lots.
6. Checking of critical parameters of roller ginning machines affecting production rate.
7. Collection of cotton marketing data like prices, import, export etc.

Reference book:

Ginning technology by TMC

TGT304:SPINNING MACHINERY 2

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examixnation for 50 marks.Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT304	SPINNING MACHINERY 2	2	2	8	30	50	40	80	200

Theory:

Topic 1: Speed Frame for Attenuation of Material

- 1.1 Objective of Machinery
- 1.2 Factors Affecting Quality of Roving Material
- 1.3 Method to Reduce Roving Stretch

Topic 2: Ring Frame and Winding for Spinning of Yarn

- 2.1 Principles of Machinery
- 2.2 Parameters Affecting Yarn Quality
- 2.3 Optimization various Parameters to Enhance Yarn Quality / Productivity
- 2.4 Methods to Minimize Yarn Breakages / Hairiness
- 2.5 Care to Eliminate Excessive Wear & Tear to Critical Parts

Practical

- 1.Measurement of moisture content of bales cotton and final yarn.
- 2.Finding out apron slippage at speed frame.
- 3.Measurement of pressure at suction tube of ring frames.

REFERENCE BOOK:

SPINNING MACHINERY BY SITRA

TGT305: COTTON TESTING PRACTICE

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 80 marks and PA for 120 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT305	COTTON TESTING PRACTICE	0	8	8	00	00	80	120	200

List of Practical

1. Measuring length variability in cotton fibers
2. Checking of proportion of seeds, seed coats, leafy matter / sand dust etc. in cotton
3. Measurement of moisture level in cotton
4. Checking of content of immature bolls / clusters in kapas
5. Measurement of length of fibers by testing machine as well as manual
6. Testing of fiber fineness and maturity
7. Observing effects of ginning process / machinery on quality of cotton fibers

Studying effect of cotton sample collection system

TGT306: ENVIRONMENT CONSERVATION & HAZARD MANEGMENT

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examixnation for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT306	ENVIRONMENT CONSERVATION & HAZARD MANEGMENT	4	0	4	40	60	00	00	100

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I Ecology and environment	1.1 Enhance knowledge about engineering aspects of Environment 1.2 Correlate the facts of ecology and environment A 1.3 assess the effect of pollution 1.4 List the causes of environmental pollution 1.5 State the major causes of air, water and noise pollution 1.6 Describe how industrial waste contaminates the land 1.7 Describe the effects of radiation on vegetables, animals	1.1 Importance of environment and scope 1.2 Engineering and environment issues 1.3 The natural system, Biotic and a-Biotic components and processes of natural system 1.4 Eco system, food chain and webs and other biological Systems, 1.5 Causes of environmental pollution 1.6 Pollution due to solid waste 1.7 water pollution, air pollution, the Noise as pollution, 1.8 Pollution of land due to industrial and chemical waste 1.9 Radiation and its effects on vegetables and animals
Unit– II Sustainable Development	2.1 Explain the concept of sustainable development 2.2 Justify the need for renewable energy 2.3 Describe the growth of renewable energy in India 2.4 Explain the concepts of waste management and methods of recycling	2.1 Concept of sustainable development, 2.2 Natural resources, a-biotic and biotic resources 2.3 Principles of conservation of energy and management 2.4 Need of Renewable energy 2.5 Growth of renewable energy in India and the world 2.6 Concept of waste management and recycling

Unit – III Wind Power	<p>3.1 Describe the growth of wind power in India</p> <p>3.2 State the differences between VAWTs and HAWTs</p> <p>3.3 Explain the differences between drag and lift type wind turbines</p> <p>3.4 Describe the working of large wind turbines</p> <p>3.5 List the types of aerodynamic control of large wind turbines</p> <p>3.6 Name the generators used in large wind turbines</p>	<p>3.1 Growth of wind power in India</p> <p>3.2 Types of wind turbines – Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT)</p> <p>3.3 Types of HAWTs – drag and lift types</p> <p>3.4 Working of large wind turbines</p> <p>3.5 Aerodynamic control of large and small wind turbines</p> <p>3.6 Types of electrical generators used in small and large wind turbines</p>
Unit – IV Solar Power	<p>4.1 Describe the salient features of solar thermal and PV systems</p> <p>4.2 Describe a solar cooker and solar water heater</p> <p>4.3 Describe the working of solar PV system</p> <p>4.4 State the salient features of polycrystalline, monocrystalline and thin film</p>	<p>4.1 Features of solar thermal and PV systems</p> <p>4.2 Types of solar cookers and solar water heaters</p> <p>4.3 Solar PV systems and its components and their working</p> <p>4.4 Types of solar PV cells</p> <p>4.5 Solar PV and solar water heaters, rating and costing</p>

SUGGESTED LEARNING RESOURCES

A. List of Books

S. No.	Title of Book	Author	Publication/Year
1	Renewable Energy Technologies	Solanki, Chetan Singh	PHI Learning, New Delhi, 2010
2	Ecology and Control of the Natural Environment	Izrael, Y.A.	Kluwer Academic Publisher
3	Environment Engineering and Disaster Management	Sharma, Sanjay K.	Luxmi Publications, New Delhi
4	Environmental Noise Pollution and Its Control	Chhatwal, G.R.; Katyal, T.; Katyal,	Anmol Publications, New Delhi
5	Wind Power Plants and Project Development	Earnest, Joshua & Wizelius, Tore	PHI Learning, New Delhi, 2011
6	Renewable Energy Sources and Emerging Technologies	Kothari, D.P. Singal, K.C., Ranjan, Rakesh	PHI Learning, New Delhi, 2009
7	Environmental Studies	Anandita Basak	Pearson
8	Environmental Science and Engineering	Alka Debi	University Press
9	Coping With Natural Hazards, Indian Context	K. S. Valadia	Orient Longman
10	Engineering and Environment	Edward S. Rubin	Mc Graw Hill Publ.

B. List of Major Equipment/ Instrument

- i. Digital sound level meters (to check noise pollution)
- ii. Digital air quality meter (to measure air pollution)
- iii. Digital handheld anemometer (to measure wind speeds)
- iv. Digital hand held pyranometer (to measure solar radiation levels)

C. List of Software/Learning Websites

- i. http://www1.eere.energy.gov/wind/wind_animation.htm
- ii. http://www.nrel.gov/learning/re_solar.html
- iii. http://www.nrel.gov/learning/re_biomass.html
- iv. <http://www.mnre.gov.in/schemes/grid-connected/solar-thermal->

B.VOC TEXTILE AND GINNING TECHNOLOGY

Semester IV

COURSE CODE	COURSE TITLE	THEORY	PRACTICAL/FIELD	TOTAL
TGT401	GINNING MACHINERY MAINTENANCE	2	4	6
TGT402	SPINNING MACHINERY MAINTENANCE	2	4	6
TGT403	YARN QUALITY PERAMETERS AND THEIR TESTING	2	0	2
TGT404	PROCESS CONTROL AT SPINNING	2	4	6
TGT405	PROCESS CONTROL AT GINNING	2	4	6
TGT406	HUMIDIFICATION AND YARN CONDITIONING	2	2	4
	TOTAL	12	18	30

TGT401:GINNING MACHINERY MAINTENANCE

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
		I	E		ES	PA	E		
TGT401	GINNING MACHINERY MAINTENANCE	2	4	6	30	50	40	80	200

Topic 1: Seed cotton Transportation System & Pre cleaning

- 1.1 Condition of Suction Fan
- 1.2 Piping Quality and its Joints Position
- 1.3 Position Ducting Bends
- 1.4 Condition of Critical Parts of Pre cleaner
- 1.5 Oiling and Greasing

Topic 2: Roller Gin Machine and Auto Feeder

- 2.1 Foundation of Gin Machinery
- 2.2 Condition of Roller Grooves and end Portion of Roller
- 2.3 Sharpness of knives and their condition
- 2.4 Working of Belt of Auto Feeder
- 2.5 Beater leveling / Position
- 2.6 Oiling / Greasing

Topic 3: Ginned Lint Transportation System

- 3.1 Position of Mouth Pieces
- 3.2 Condition of Ducting / Engle of Piping
- 3.3 Maintenance of Suction Fan / Stationary Condensor

Topic 4: Post Cleaning Treatment

- 4.1 Condition of Critical Parts like Spike rollers / Grid Bars
- 4.2 Maintaining Various Settings between Elements
- 4.3 Rotation of Rollers
- 4.4 Maintaining Speed Ratio

Topic 5: Cotton Bailing Press

- 5.1 Condition of Ram
- 5.2 Pressure Capacity on Cotton
- 5.3 Speed of Cotton Bale Pressing Efficiency

Practical:

1. Improving condition of critical parts of ginning and transportation systems.
2. Measurement of different settings of critical parts of ginning machines and set them.
3. Ideal grooving of ginning rollers.
4. Sharpening of fixed knives.
5. Measurement of speed of critical parts of ginning machinery.
6. Cleaning of ginning machinery.
7. Observing effect of greasing and oiling in ginning machines.

Observing performance baling press in terms of its pressing efficiency

REFERENCE BOOK:

GINNING MACHINERY MAINTAINANCE BY BAJAJ STEEL

TGT402:SPINNING MACHINERY MAINTENANCE

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT402	SPINNING MACHINERY MAINTENANCE	2	4	6	30	50	40	80	200

Topic 1: Blow Room and Carding Machinery

- 1.1 Blow Room Beater Condition
- 1.2 Wire Condition Carding Licker in / Cylinder / Flats
- 1.3 Wear and Tear to Critical Parts of Blow room & Carding machinery
- 1.4 Working of Sensors

Topic 2: Drawing and Combing Machinery

- 2.1 Condition of Drafting Roller
- 2.2 Eccentricity of Drafting Rollers
- 2.3 Condition of Trumpet
- 2.4 Condition of Comber Half Laps
- 2.5 Wear and Tear to Comber Nippers / Detaching Rollers etc.
- 2.6 Function of Auto Leveler

Topic 3: Speed / Ring Frames and Winding Machinery

- 3.1 Condition of Rubber Cots/ Aprons
- 3.2 Quality of Drafting Rollers / Clearers
- 3.3 Alignment of Ring and Spindles
- 3.4 Cleanliness of Creel Rollers / Roving Holders
- 3.5 Condition of Winding Drums

Topic 4: Use of Instruments at Various Departments

- 4.1 Peri microscope to observe Carding Wires Condition
- 4.2 Nelometer to Measure Roller Pressure at Draw Frame
- 4.3 Carbon Impression to Observe Condition of Drafting Rollers
- 4.4 Indicator to Measure Drafting Roller Pressure
- 4.5 Indicator to Measure Suction Pressure at Ring Frame
- 4.6 System to Measure Diameter of drafting Rollers
- 4.7 Tester for Measuring Eccentricity of Drafting Rollers
- 4.8 Tachometer to Measure Speeds of Critical Parts

Practical:

1. Rectifying condition of spinning machinery.
2. Measurement of critical settings of spinning machinery.
3. Identifying sharpness of wire points of beaters and cylinders.
4. Checking of eccentricity of ring frame rollers.
5. Spindle centering at ring frame.
6. Cleaning of drafting zone.
7. Oiling and greasing of different parts of machinery.

TGT403:YARN QUALITY PERAMETERS AND THEIR TESTING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examixnation for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT403	YARN QUALITY PERAMETERS AND THEIR TESTING	2	0	2	40	60	00	00	100

Topic 1: Yarn Count / Strength and its variability

- 1.1 Meaning of Count and Strength
- 1.2 Testing Method to Find out Count / Strength
- 1.3 Calculation to Find out Variation of Count / Strength
- 1.4 Norms on Level Count / Strength and their Variability

Topic 2: Yarn Unevenness and Imperfections

- 2.1 Basics of Unevenness of Material
- 2.2 Types of Imperfections
- 2.3 Fibers / Machinery Related Parameters Affecting Imperfections
- 2.4 Norms on Level of Yarn U% & Imperfections

Topic 3: Yarn Faults

- 3.1 Fundamentals of Yarn Faults
- 3.2 Types of Faults and Their Testing Method
- 3.3 Effect of Faults on Processing of Yarn / Fabric & Their Quality
- 3.4 Norms on Level of Faults

Topic 4: Yarn Twist and Appearance

- 4.1 Importance of Twist in Yarn
- 4.2 Method to Find out Twist and its Variability
- 4.3 Appearance Grade for Yarn

Topic 5: Instruments for Testing various Quality Parameters

5.1 Wrap Reel and Balance for Checking Weight of Sliver/Roving/Yarn

5.2 Yarn Strength Testers for Checking Single Thread / Lea Form Yarn

5.3 Uster for Measuring Yarn Unevenness/ Imperfections & Hairiness

5.4 Classimat for Observing Level of Short / Long Thick-Thin Faults in Yarn

REFERENCE BOOK:

PROCESS CONTROL AT SPINNING BY A R GARDE AND T A SUBRAMANIAN

TGT404:PROCESS CONTROL AT SPINNING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examixnation for 50 marks.Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT404	PROCESS CONTROL AT SPINNING	2	4	6	30	50	40	80	200

Topic 1: Control of Count / Strength

- 1.1 Number of Wrappings / Tolerance Limit
- 1.2 Parameters of Blow Room to Ring Frame Machineries
- 1.3 Weighing Equipment
- 1.4 Atmospheric Condition
- 1.5 Suggested Wrapping Procedure

Topic 2: Short Term Irregularity

- 2.1 Setting between Rollers
- 2.2 Break Web and Creeling Drafts
- 2.3 Trumpet Size
- 2.4 Machinery Condition
- 2.5 Total Draft and Break Draft at Speed / Ring Frames
- 2.6 Wrong Size of Sliver Guide / Slipping Aprons
- 2.7 Top Roller Pressure / Hardness
- 2.8 Apron Spacing / Roving Twist

Topic 3: Yarn Faults

- 3.1 Types of Faults
- 3.2 Level of Seed coat Fragments / Short Fibers in Cotton
- 3.3 Improper Settings at Carding to Ring Frame Machineries
- 3.4 Poor Condition of Spinning Machineries
- 3.5 Improper Parameters like Roller Pressure/Eccentricity, Draft Level, Speed etc
- 3.6 Poor Humidification / Work Practices

Topic 4: Yarn end Breaks

- 4.1 Machinery Condition
- 4.2 Machinery Parameters
- 4.3 Atmospheric Condition
- 4.4 Work Practices

Topic 5: Yarn Realization and Process Waste Control

- 5.1 Waste Losses at Blow Room / Carding /Combing
- 5.2 Yarn Waste
- 5.3 Sweepings
- 5.4 Invisible Loss
- 5.5 Moisture Level in Yarn

Practical:

1. Optimization of speed and setting related parameters.
2. Improving yarn quality.
3. Optimization of waste level.
4. Reducing end breakage rate at ring frame.
5. Reducing variability in yarn quality.
6. Increasing yarn realization.
7. Optimizing humidification system.

REFERENCE BOOK:

PROCESS CONTROL AT SPINNING BY A R GARDE AND T A SUBRAMANIAN

TGT405:PROCESS CONTROL AT GINNING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examination for 50 marks. Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT405	PROCESS CONTROL AT GINNING	2	4	6	30	50	40	80	200

Topic 1: Cleaning of Cotton

- 1.1 Checking of Trash Content in Ginned Cotton
- 1.2 Parameters of Cleaning Machines
- 1.3 Preparation of Kapas
- 1.4 Level of Moisture in Kapas

Topic 2: Rupture of Fibers

- 2.1 Machinery Condition
- 2.2 Machinery Parameters
- 2.3 Level of Moisture in Kapas
- 2.4 Opening of Kapas Bolls prior to Ginning

Topic 3: Ginning %

- 3.1 Quality of Seed Cotton
- 3.2 Speed of Roller Gin Machine
- 3.3 Condition of Knives / roller
- 3.4 Preparation of Kapas

Topic 4: Ginning Productivity

- 4.1 Quality of Kapas
- 4.2 Speed / Setting Related Parameters of Roller Gin Machine
- 4.3 Preparation of Kapas
- 4.4 Condition of Gin Machine

Practical:

1. Optimization of speed and setting related parameters.

2. Improving condition of critical points.
3. Deciding ideal process sequence.
4. Optimization of moisture content in materials.
5. Enhancement of cotton realization.
6. Improving productivity.

REFERENCE BOOK:

PROCESS CONTROL AT GINNING BY P H SHAH

TGT406:HUMIDIFICATION AND YARN CONDITIONING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examixnation for 50 marks.Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ES E	PA	
TGT406	HUMIDIFICATION AND YARN CONDITIONING	2	2	4	30	50	40	80	200

Topic 1: Humidification System

- 1.1 Principles and Function
- 1.2 Importance of System
- 1.3 Type of Mechanism
- 1.4 Maintenance of System

Topic 2: Yarn Conditioning

- 2.1 Types of Systems
- 2.2 Advantages of System
- 2.3 Working of System
- 2.4 Optimization of System

REFERENCE BOOK :

HUMIDIFICATION SYSTEM BY C DOCTOR

Semester V

Course Code	Course Title	Credit		Total
		Th.	Pra/Field	
TGT501	COMPUTER APPLICATION	0	6	6
TGT502	INDUSTRIAL PROTECTION	4	2	6
TGT503	INDUSTRIAL MANAGEMENT	3	0	3
TGT504	STATISTICAL QUALITY CONTROL	3	0	3
TGT505	INDUSTRIAL PRACTICE AT GINNING	0	12	12
	TOTAL			30

TGT501: COMPUTER APPLICATION

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 40 marks and PA for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT501	COMPUTER APPLICATION	0	6	6	00	00	40	60	100

Unit	Major Learning	Topics and Sub-topics
Unit – I Basics of Computer System	1.1 Describe computer hardware and software 1.2 Identify I/O devices 1.3 Describe functioning of CU ALU and memory unit 1.4 Differentiate various types of printers 1.5 Explain use of OS 1.6 Demonstrate various file handling operations	Basics of Computer System 1.1 Concept of Hardware and Software 1.2 Computer block diagram 1.3 Input Output unit 1.4 CPU, Control Unit, Arithmetic logic Unit (ALU), Memory Unit 1.5 Monitor, Printers: Dot matrix, Laser, Inkjet, Plotters, Scanner 1.6 System software and Application Software 1.7 Operating system concepts, purpose and functions 1.8 Operations of Windows OS. 1.9 Creating and naming of file and folders 1.10 Copying file, renaming and deleting of files and folders, 1.11 Searching files and folders, installation application, creating shortcut of application on the desktop 1.12 Overview of control Panel, Taskbar.

Unit- II Using MS - Word 2007	2.1 Use basics text formatting features 2.2 Manipulate text 2.3 Use page Setup features 2.4 Use spell and grammar utility 2.5 Work with graphics/clipart 2.6 Create and manipulate table 2.7 Use auto shapes and its formatting with text	Using MS - Word 2007 2.1 Overview of Word processor 2.2 Basics of Font type, size, colour, 2.3 Effects like Bold, italic , underline, Subscript and superscript, 2.4 Case changing options, 2.5 Inserting, deleting, undo and redo, Copy and Moving (cutting) text within a document, 2.6 Formatting Paragraphs and Lists 2.7 Setting line spacing; single 2.8 Page settings and margins including header and footer 2.9 Spelling and Grammatical checks 2.10 Table and its options, Inserting rows or columns, merging and splitting cells, Arithmetic Calculations in a Table. 2.11 Working with pictures, Inserting Pictures from Files, 2.12 Using Drawings and WordArt; Lines and Shapes, Modifying Drawn Objects, Formatting Drawn Objects, options for Creating and Modifying a WordArt Object
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Unit	Major Learning	Topics and Sub-topics
Unit- III Using MS - Excel 2007	3.1 Use basic formatting and data entry features 3.2 Use formula and functions 3.3 Work with graphics 3.4 Create and manipulate charts 3.5 Use header and footer options 3.6 Setup page layout and print worksheet	Using MS - Excel 2007 3.1 Introduction to Excel 2007, 3.2 Introduction to data, Cell address, Excel Data Types, Concept of hyperlink 3.3 Introduction to formatting, number, text and date formatting 3.4 Concept of worksheet and workbook 3.5 Understanding formulas, Operators in Excel 2007, Operators Precedence, Understanding Functions, Common Excel Functions such as sum, average, min, max, date, transpose, In, And, or, sqrt, power, upper, lower. 3.6 Types of graphics : Word art, auto shapes , Images 3.7 Introduction to charts, overview of different types of charts available with Excel 3.8 Concept of print area, margins, header, footer and other page setup options

Unit – IV
Using MS -
PowerPoint
2007

- 4.1 Create new presentation and apply basic formatting features
- 4.2 Use master slide
- 4.3 Create and manipulate table
- 4.4 Work with objects and clips
- 4.5 Work with video
- 4.6 Work with audio
- 4.7 Use special effects
- 4.8 Use navigation and hyper linking

Using MS - PowerPoint 2007

- 4.1 Outline of an effective presentations,
- 4.2 Starting a New Presentation Files, Saving work,
- 4.3 Creating new Slides, Working with textboxes.
- 4.4 Changing a slides Layout, Applying a theme, Changing Colours, fonts and effects, Creating and managing custom Colour & font theme, Changing the background
- 4.5 Managing slides master, Managing theme.
- 4.6 Changing the font, font size, font colour, text fill,
- 4.7 Adjusting character spacing and line spacing Formatting text boxes.
- 4.8 Word arts, styles,
- 4.9 Formatting bulleted lists and numbered list,
- 4.10 Finding and replacing text, Correcting your spelling
- 4.11 Creating a new and editing a table's structure,
- 4.12 Selecting, deleting, moving, copying, resizing and arranging objects,
- 4.13 Working with drawing tools, Applying shape or picture styles, Applying object borders, object fill, object effects.
- 4.14 Working with clip art collection and modifying clip art,
- 4.15 Embed a video, Link to a video, Size a video, Video playback options,
- 4.16 Configuring a sound playback, Assigning sound to an object, Adding a digital music sound track, Transition effects and timings,

Unit	Major Learning	Topics and Sub-topics
		4.17 Creating hyperlinks, Using action buttons
UNIT-V MS-OFFICE INDIC & TBIL	5.1 Create application and other documents in Gujarati.	5.1 Introduction about MS Office Indic 5.2 Installation of ms-office indic 5.3 How to change language English to Gujarati 5.4 Introduction about the Gujarati keyboards 5.5 Introduction about the Gujarati IME. 5.6 Difference between Remington and 5.7 Transliteration K/B 5.8 How to operate the K/B. What is 5.9 Transliteration K/B? 5.10How to type different Characters and Words 5.11from transliteration K/B 5.12How to use IME help? How to use spelling 5.13grammars check in Gujarati? 5.14What is Smart Tag? What is Thesaurus? 5.15How to change the Menu from English to Gujarati? 5.16Convert the ASCII font to Unicode from TBIL Converter
UNIT-VI Introduction to Internet HTML	6.1 Use internet access efficiently.	6.1 What is the Internet? 6.2 Web pages 6.3 Home page 6.4 Use of web sites 6.5 Access providers 6.6 Types of access 6.7 The browser 6.8 Universal resource locators 6.9 Browsing or surfing the web 6.10A search engine 6.11Internet phone Applications of the Internet: 6.12E-mail 6.13Voice mail 6.14Newsgroup 6.15Mailing list 6.16Internet relay chat
Unit – VII Using HTML	7.1 Comprehend the HTML page structure 7.2Use basic formatting tags in HTML 7.3Create and format tables	Basic structure of HTML 7.1 Structure of HTML Page 7.2 Inserting formatting tags for Text: bold, italic, underline, line break, special character, predefine headings, paragraph,

Unit	Major Learning Outcomes	Topics and Sub-topics
	7.4 Insert and format images in HTML page 7.5 Create various types of hyper linking 7.6 Work with video and sound files	comments. 7.3 Font color, size, Alignment 7.4 Margin with body tag, background and text colour 7.5 Ordered and unordered lists Tables, Images and Links in HTML 7.6 Tables – basic structure, Using TD, TR, TH tags, use of basic elements in table : border, cellpadding, cellspacing, width, caption, align, bgcolor 7.7 Images in web page: inserting and formatting of images using SRC, border, Vspace, Hspace, align, ALT, height, width and background in HTML page 7.8 Types of links: Linking two or more web pages, linking within a web page, linking to external page, linking to a specific point in another web page, linking image file, mailto. Working with Multimedia Objects 7.9 Video and sound file. Add marquees of scrolling text. Inserting and controlling video and audio in HTML page

SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

S. No.	Unit	Experiment
1	I	<input type="checkbox"/> Create and manage files and folder tree
2	II	<input type="checkbox"/> Entering and editing text in document file. <input type="checkbox"/> Apply formatting features on Text like Bold, Italics, Underline, font type, colour and size. Apply features like bullet, numbering <input type="checkbox"/> Create documents insert images format tables
3	III	<input type="checkbox"/> Entering and editing data in worksheet <input type="checkbox"/> Apply formula and functions in the sheet <input type="checkbox"/> Use graphics and auto shapes in Excel sheet

		<ul style="list-style-type: none"> ☐ Print sheet using print area
4	IV	<ul style="list-style-type: none"> ☐ Basic operations of Power point, Create PPT and inset and delete slides ☐ Create Project presentations, Lecture presentations. ☐ Use of Mater Slide in Presentation ☐ Apply basic formatting features in presentation like font, font size, font colour, text fill, spacing and line spacing Formatting text boxes, word arts, styles bullet and numbering ☐ Working with drawing tools, Applying shape or picture styles, Applying object
5	V	<ul style="list-style-type: none"> ☐ Installation and keyboard setting of Gujarati indic.
6	VI	<ul style="list-style-type: none"> ☐ Practice browsing of different sites using search engine ☐ practice and understand different E-Mail services – Outlook, Yahoo mail, rediffmail etc ☐ Practice Creating E-Mail accounts, Sending, Receiving & Storing of
7	VII	<ul style="list-style-type: none"> ☐ Basic program of HTML ☐ Program based on Inserting formatting tags for Text: bold, italic, underline, line break, special character, predefine headings, paragraph, comments. ☐ Use Font color, size, background and Alignment ☐ Create ordered and and unordered list ☐ Create program on Tables – basic structure, Using TD, TR, TH tags, use of basic elements in table : border, cellpadding, cellspacing, width, caption, align, bgcolor ☐ Working with Images in web page: inserting and formatting of images using

SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No.	Author	Title of Books	Publication
1	R Taxali	Computer Course	Tata McGraw Hills. New Delhi.
2	Xavier	World Wide Web design with HTML	Tata McGraw Hills. New Delhi.
3	CURTIN, FOLEY, SEN, MORIN	INFORMATION TECHNOLOGY	TMH
4	V. RAJARAMAN (3RD EDITION)	FUNDAMENTALS OF COMPUTERS	PHI
5	CISTEMS	INTERNET AN	TMH

6	SAGMAN	MICROSOFT OFFICE FOR WINDOWS('O' LEVEL DOEACC)	PEARSON EDUCATION ISBN 81- 7808-341-8
7	C. XAVIER	WORLD WIDE WEB	TMH
8	COURTER	MASTERING MS OFFICE - 2000 PROFESSIONAL	TECHMEDIA
9	DAVID D.BUCH	PAGEMAKER 6.5 /7	BPB PUBLICATION
10		PHOTOSHOP 6/ 7	BPB PUBLICATION

**B. List of Major Equipment/
Instrument**

- I. COMPUTER
- II. PROJECTOR
- III. EQUIPMENTS LIKE PRINTER,SCANNER,PLOTTER,MODEM

C. List of Software/Learning Websites

- I. Microsoft Office Professional 2010
- II. Norton Antivirus 2012
- III. Window 7.0
- IV. MS-OFFICE Indic

TGT502: INDUSTRIAL MANAGEMENT.

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examixnation for 50 marks.

Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT502	INDUSTRIAL PROTECTION	4	2	6	30	50	40	80	200

Sr. No.	Subject Content
1	<p>1.0 INTRODUCTION TO INDUSTRIAL MANAGEMENT.</p> <p>1.1 Know the objectives of learning this subject.</p> <p>1.2 Need, Scope & importance of Industrial Management in Industries.</p> <p>1.3 Need of attitude, knowledge & skill required for application of Industrial Management.</p> <p>1.4 System- concept , definition, types, parameters , variables and behavior</p>

2	<p>2.0 ORGANISATION STRUCTURE AND ORGANISATIONAL DYNAMICS.</p> <p>2.1 Organisation structure-definition, goals, factors considered in formulating structure.</p> <p>2.2 Concept, meaning and importance of division of labor, scalar & functional processes, span of control, delegation of authority, centralisation and decentralisation in industrial management.</p> <p>2.3 Types, advantages, disadvantages and applications of organisation structure.</p> <p>2.4 Organisational culture and climate –meaning , differences and factors affecting them.</p>
3	<p>3.0 MATERIALS MANAGEMENT .</p> <p>3.1 Material management-definition, functions, importance, relationship with other departments.</p> <p>3.2 Purchase - objectives, purchasing systems, purchase procedure, terms and forms used in purchase department.</p>
	<p>3.4 Functions of store keeper, types of records maintained by store, various types and applications of storage equipments, need and general methods for codification of stores.</p> <p>3.5 Definition of inventory control, objectives of inventory control, derivation for expression for Economic Order Quantity (EOQ), ABC analysis, other modern methods of analysis, various types of inventory models such as Willson’s inventory model, replenishment model and two bin model.</p> <p>3.6 Material Requirement Planning(MRP)-concept ,applications and brief details about software packages available in market.</p> <p>3.7 Waste control- need and ways to reduce material</p>

4	<p>4.0 PRODUCTION, PLANNING AND CONTROL (PPC):</p> <p>4.1 PPC-meaning, phases, importance and objectives.</p> <p>4.2 Explain in detail the functions of PPC along with necessary forms used in it, softwares available in market and their features.</p> <p>4.3 Types of productions, calculation of Economic Batch Quantity (EBQ), critical ratio scheduling and Gantt charts.</p>
5	<p>5.0 CRITICAL PATH METHOD AND PRE EVALUATION REVIEW TECHNIQUE (CPM/PERT).</p> <p>5.1 CPM & PERT-meaning, features, difference, applications.</p> <p>5.2 Understand different terms used in network diagram.</p> <p>5.3 Draw network diagram for a real life project containing 10-15 activities, computation of LPO and EPO.</p> <p>5.4 Determination of critical path on network.</p>
6	<p>6.0 VALUE ANALYSIS (VA) :</p> <p>6.1 VA-definition, terms used, process, importance and methods.</p> <p>6.2 VA flow diagram.</p>

Reference Books:

1. System Analysis	O.Optner
2. Learning Package on Industrial Management	TTTI, Bhopal
3. What every supervisor should know	Lester R.
4. CPM & PERT principles and Applications	L.S.Srinath
5. Modern Production Management	Buffa
6. Materials Management	N. Nair
7. Value Analysis	Mikes
8. Industrial Engineering & Management	O. P. Khanna

TGT503: INDUSTRIAL PROTECTION

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examination for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT503	INDUSTRIAL MANAGEMENT	3	0	3	40	60	00	00	100

Sr. No.	Subject Content
1.	<p>1.0 Maintenance of Electrical Machine/Equipment:</p> <p>1.1 Basic need of maintenance.</p> <p>1.2 Meaning, Importance and advantages of preventive maintenance of preventive maintenance.</p> <p>1.3 Maintenance schedules of different types of electrical machines (Rotating and static) and equipment, transmission line, circuit breakers and cables</p> <p>1.4 Break down maintenance and its record keeping.</p> <p>1.5 Definition of trouble shooting.</p> <p>1.6 Causes of faults and types of faults.</p> <p>1.7 Causes of faults in distribution installation and cable.</p>
2	<p>2.0 ELEMENTS OF PROTECTION</p> <p>2.1 Line diagram of a power system and its elements.</p> <p>2.2 Faults and abnormalities, their causes, types and effects.</p> <p>2.3 Functions of basic elements of a protective system.</p>

3	3.0 PROTECTIVE RELAYS AND PROTECTIVE TRANSFORMER 3.1 Concept of protective relay and its selection. 3.2 Classification of relays. 3.3 Principle of working and operation of relays and their construction. 3.4 Basic terms related to relay like pick up value, reset value- and operating current etc. 3.5 Maintenance and testing of relays. 3.6 Necessity of Protective Transformers.
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4.	<p style="text-align: center;">PROTECTIVE SYSTEM</p> <p>4.1 Necessity & types of interruption devices like ACB, OCB, ABCB, SF6 and vacuum circuit breakers.</p> <p>4.2 Line diagram of a protective system showing different circuit interrupting devices.</p> <p>4.3 Sequence of operation and interlocking.</p> <p>4.4 Requirement & types of isolators.</p> <p>4.5 Working principle and various types of circuit breakers.</p> <p>4.6 Abnormalities & faults in a power system & its effects.</p> <p>4.7 Protection against Prime mover failure and unbalance loading.</p> <p>4.8 Protection of transformers.</p> <p>4.9 Protection of Transmission line and feeders.</p> <p>4.10 Protection of motors.</p> <p>4.11 Protection of bus bars.</p>
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NOTE:- Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:

- (1). Measure earth resistance of installation in building/domestic fitting & appliances etc.
- (2). Trouble shooting of an induction motor.
- (3). Dismantle and trouble shoot of ceiling fan.
- (4). Read and interpret I.E. rules pertaining to safety.
- (5) Use overload relay.
- (6) Use Buchholz relay for transformer protection.
- (7) Use thermal overload relay for protection of motor and set the relay properly.
- (8) Check the Polarity of C.T. & P.T. and connect it with the relay.
- (9) Apply the balance current protection scheme using appropriate switch gear.
- (10) Read and interpret the protection scheme for an alternator in power station (from Blue print and visit).
- (11) Read and interpret various protective scheme used for transmission lines and feeders (from Blue print and visit).
- (12) Draw schematic diagram of protective schemes for 66 KV/ 132 KV/220 KV Sub station. (after visit)
- (13) Visit a substation and prepare its technical report emphasizing on control side

TEXT BOOK:

- 1) Switch gear & Protection by S. Rao
- 2). Electrical Installation estimating and costing S.L. Uppal Khanna Publication.
- 3). A Course in Electrical Installation Estimating & Costing by J.B.Gupta- Katson
- 4). Electrical Maintenance and Repair By J.I. Watt

Reference Books:

- (1) Protective Relaying Vol. I & II by Van Warrington
- (2) Protective Relaying by Russel & Mason
- (3) Electrical Power by S.L.Uppal
- (4) Electrical Power System V. K. Mehta
- (5) J & P Hand book of Switchgear by Lythall

TGT504: STATISTICAL QUALITY CONTROL

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examination for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT504	STATISTICAL QUALITY CONTROL	3	0	3	40	60	00	00	100

Unit	Major Learning Outcomes (in	Topics and Sub-topics
Unit – I Introduction to S.Q.C. in textile	1a. Describe concept of Quality control for textile parameter variables. 1b. List the textile parameter variables requiring Q.C 1c. List the Parameters of Textile Processes & Sub processes 1d. Enumerate Importance of SQC in Textile processes & Sub processes - Count , Twist, Strength, Blend %age, Color, fibre length 1e. Prepare frequency distribution	1.1 Textile parameters : Parameters of Textile Processes & Sub processes - Count , Twist, Strength, Blend %age, Color, fibre length , weaving , fabric , printing , processing , knitting , utilities etc 1.2 Importance of Statistics 1.3 Parameters of Textile Processes & Subprocesses 1.4- Count , Twist, Strength, Blend %age, Color, fibre length , weaving , fabric , printing , processing , knitting , utilities etc 1.5 Different types of frequency

<p>Unit- II</p> <p>Basic statistical concept</p>	<p>2a. Calculate measures of central tendency- mean, mode, median, and quartile.</p> <p>2b. Calculate Mean deviation, standard deviation. c.v. %, Variance</p> <p>2b.1 Describe the effect of change in values of Mean deviation, standard deviation. c.v. %, Variance on Parameters of Textile Processes & Subprocesses -Count ,Twist,Strength, Blend % age, Color, fibre length , weaving , printing , processing , knitting , utilities ,etc</p> <p>2c. Establish correlation</p>	<p>2.1 Different Measures of central tendency</p> <p>2.2 Calculation of mean, median, mode and quartile.</p> <p>2.3 Different Measures of Dispersion</p> <p>2.4 Calculation of mean deviation, Standard deviation and C.V.%</p> <p>2.5 Correlation- diff types of correlation</p> <p>2.6 Karl Pearson's coefficient of correlation</p> <p>2.7 Parameters of Textile Processes & Sub processes -Count ,Twist, Strength, Blend %age, Colour , fibre length , weaving , printing , processing , knitting , utilities ,etc</p> <p>2.8 Sampling Technique for textile processes/sub processes <u>intermediate product : Auto</u></p>
<p>Unit- III</p>	<p>3a. Apply binomial distribution</p>	<p>3.1 Detail study of Binomial distribution</p>

Unit	Major Learning Outcomes (in brief)	Topics and Sub-topics
<p>Distribution</p>	<p>3a. Apply binomial distribution for event.</p> <p>3b. Apply Poisson distribution</p> <p>3c. Apply normal distribution</p>	<p>3.2 Detail study of Poisson distribution with simple Calculation.</p> <p>3.3 Detail study of normal distribution. with simple calculation,</p>
<p>Unit-IV</p> <p>Statistical Test</p>	<p>4a. Judge the hypothesis using T test</p> <p>4b. Judge the hypothesis using F test</p>	<p>4.1 Study of T test with simple textile example</p> <p>4.2 Study of F test with simple textile example</p> <p>4.3 Study of χ^2 test (chi-square test)</p>
<p>Unit-V</p> <p>Control Charts</p>	<p>5a. Interpret charts by plotting X & R charts.</p> <p>5b. Interpret charts by plotting P charts.</p>	<p>5.1 X chart and their application</p> <p>5.2 R chart and their application</p> <p>5.3 P chart and their application</p> <p>5.4 C chart and their application</p>

Unit-VI International system of units for textile	6a. Write international systems of units for textile. 6b. Enlist important of	6.1 Recommended B. I. S. Units for textile of the processes & sub - processes parameters .
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SUGGESTED LEARNING RESOURCES

List of Books

S.No.	Author	Title of Books	Publication
1	J. E .Booth	Textile Testing	Year 1996 CBS
2	Tippet, Vikas gupta.	Statistical Methods for Textile	Year 1982
3	C.B. Gupta	Statistical Methods	Year 2004 Vikas publishing house.
4	Raygopalan ,Angopalan	Testing Testing part I & 2	Year 1993 S.S.M.I.T.T ,

List of Software /Learning Websites

- i. SPSS
- ii. <http://www.opentextbookstore.com/mathinsociety/current/Statistics.doc>
- iii. http://www.uster.com/fileadmin/customer/Services/USTER_Statistics/Application_report_The_common_quality_language_for_the_textile_industry.pdf
- iv. <http://www.massey.ac.nz/~mbjones/Book/Chapter11.pdf>
- v. <http://wzr.pl/~wycinka/Descriptive%20statistics/descr.summary.sol.pdf>
- vi. <http://www.fil.ion.ucl.ac.uk/spm/doc/mfd/2004/FandTtests.ppt>
- vii. <https://www.fil.ion.ucl.ac.uk/spm/doc/mfd/2005/Ft-tests.ppt>

TGT505:INDUSTRIAL PRACTICE AT GINNING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 160 marks and PA for 240 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT505	INDUSTRIAL PRACTICE AT GINNING	0	12	12	00	00	160	240	400

Semester VI

Course Code	Course Title	Credit		Total
		Th.	Pra/Field	
TGT601	ELECTRICAL AND ELECTRONICS ENGGFOR GINNING & SPINNING	2	2	4
TGT602	ENTREPRENURSHIP DEVELOPMENT	4	0	4
TGT603	ELECTRONIC PRACTICE	0	4	4
TGT604	INDUSTRIAL PRACTICE AT SPINNING	0	18	18
	TOTAL			30

TGT601:ELECTRICAL AND ELECTRONICS ENGGFOR GINNING & SPINNING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 30 marks and external Examination conducted by University examixnation for 50 marks.

Students are evaluated on the basis ESE for 40 marks and PA for 80 marks for practical examination

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT601	ELECTRICAL AND ELECTRONICS ENGGFOR GINNING & SPINNING	2	2	4	30	50	40	80	200

DETAILED COURSE CONTENT

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I DC Circuits	1a. Define various electrical parameters 1b. Calculate energy bills	1.1 Electrical charge 1.2 The idea of electrical potential 1.3 Concept of EMF, current 1.4 Resistance, specific resistance and ohm's law 1.5 Work, power and energy 1.6 Simple calculations of energy bills
Unit – II AC Circuits	2a. Explain generation of three phase supply 2b. Define various electrical parameters related to AC supply 2c. Explain three phase star and delta connection. 2d. Calculate simple problems of three phase star/delta type load.	2.1 Definition of an AC quantity 2.2 Generation of alternating voltage 2.3 Three phase alternating voltage equation 2.4 Three phase star and delta connection 2.5 Relation of the line voltage and phase voltage in three phase star connection and delta connection 2.6 Three phase power equation and simple problem on it. 2.7 Safety measures in handling AC voltages.

Unit-III DC Machines	3a. Describe principle, construction and applications of D.C. motor 3b. Explain principle, construction and applications of D.C. generator. 3c. Explain the working of three point DC motor starter	3.1 Working principle, construction and applications of D.C. motor and generator. 3.2 Speed control of D.C. motor. 3.3 Necessity of starter 3.4 Working of three point starter and connection diagram
Unit-IV AC Machines	4a. Explain working principle and classification of transformers. 4b. Explain construction of single phase transformer. 4c. Explain working principle, classification and construction of induction motor. 4c. Explain the working of various AC motor starters.	4.1 Working principle, construction & types of transformers. 4.2 Accessories of power transformer. 4.3 Auto transformer. 4.4 Working principle of three phase induction motor 4.5 Types and application of different types of induction motors in textile industry. 4.6 Different types of induction motor starters like D.O.L., Star-delta starter and Auto transformer starter 4.7 Working principle of single phase induction motor 4.8 Common faults and their rectifications in three phase AC system
Unit-V Illumination	5a. Explain the laws of Illumination 5b. Define various parameters related to Illumination. 5c. Explain the concept of direct and indirect Illumination. 5d. Solve simple problems related to Illumination	5.1 Production of light 5.2 Laws of illumination 5.3 Define Luminous flux, Luminous intensity, solid angle and plane angle 5.5 Direct and Indirect Illumination system 5.6 Tube light wiring 5.7 Different light sources and reflection
Unit-VI Photo Electric Devices and Digital Controls	6a. Explain the working principle of photo cell and photo diode. 6b. Explain various control circuit related to photo cell.	6.1 Construction and working of photo cell and photo diode. 6.2 Simple operating control circuit using photo/solar cell 6.3 Automatic light operated relay using photo devices. 6.4 Use of digital control in textile processes.
Unit-VII Transducers and Instrumentation	7a. Define and classify various types of transducer. 7b. Explain different types of electrical instruments	7.1 Definition, and classification of different types of transducer and their application for energy, measurement in textile industry. 7.2 Connection of meters like A-meter, Volt meter, Watt meter, power factor meter, frequency meter, energy

SUGGESTED LIST OF EXERCISES/PRACTICALS

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical Exercises
1	I	Verification of OHM's law
2	I	Measure equivalent resistance in (a)Series resistances(b)Parallel resistances
3	I	Measure power in D.C. Circuits
4	II	Measure power and power factor in the single phase A.C. circuit.
5	II	Determine relationship between line value and phase value in star/delta connection
6	III	Identify different part of DC machine and write function of each parts
7	III	Change the direction of rotation of (a)DC shunt motor (b)Ceiling fan (c)Three phase induction motor
8	III	Measure speed of DC shunt motor at different armature voltage
9	III	Demonstrate three point DC motor starter and working of each parts
10	IV	Determine turns ratio of single phase transformer
11	IV	(a)Draw simple line diagram of DOL starter (b)List electrical components used in it and function of each component
12	IV	Assemble and identify parts of single phase AC motor (ceiling fan).
13	V	Design an illumination scheme for small building for given data.
14	V	Measure illumination level of different types of light sources and prepare report for it
15	VI	Operate photo electric relay using twilight switch.
16	VI	Make connections for Smoke detector circuit
17	VII	Measure linear displacement using LVDT
18	VII	Test the strain using strain gauge
19	VII	Calibrate Ammeter as per IS
20	VII	Calibrate Voltmeter as per IS
21	VII	Calibrate Energy meter as per IS

SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No.	Title of Book	Author	Publication
1.	B.L.Theraja	Fundamentals of Electrical Engg.	S Chand
2.	B.L.Theraja-II	Electrical Machines	S Chand
3.	V.K.Mehta	Fundamentals of Electrical Engg.	S Chand
4.	S.L.Uppal	A text book of Electrical Engg.	Khanna publication
5.	A K SAWHNEY	Electrical measurement and instrumentation	Dhanpat Rai & Sons
6.	J B GUPTA	Electrical Power Utilization and Traction	S.K.Kataria & Sons

B. List of Major Equipment/ Instrument with Broad Specifications

- i.Ammeter, Voltmeter, Wattmeter, Multimeter
- ii.DC motors
- iii.Single phase transformer
- iv.AC motors
- v.Tube light, photo cell

C. List of Software/Learning Websites

- i.www.electricalandelectronics.org
- ii.www.allaboutcircuits.com

TGT602:ENTREPRENURSHIP DEVELOPMENT

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations for 40 marks and external Examination conducted by University examixnation for 60 marks

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT504	STATISTICAL QUALITY CONTROL	3	0	3	40	60	00	00	100

Sr. No.	Course content
1.	<p>ENTREPRENEURSHIP DEVELOPMENT — CONCEPT & SCOPE</p> <p>1.1 Entrepreneurship development concept and need in context of changing global environment; scope in local and global market.</p> <p>1.2 Desirable qualities of entrepreneur; relativity importance; methods to cultivate, its role and need for success.</p> <p>1.3 Concept and importance of productivity, quality, cost consciousness and customers satisfaction & need analysis.</p> <p>1.4 Types of enterprise.</p>

<p>2.</p>	<p>FACILITY PLANNING</p> <p>2.1 Product (Physical and service both) selection : Concept and importance, sources including national/international publications. 2.1.1 creativity and product selection. 2.1.2 Competition-types and effect on product selection. 2.1.3 Product selection process; new idea mortality curve; 2.1.4 product development stages.</p> <p>2.2 Process Selection : 2.2.1 Concept and importance; forms of transformation; transformation cost; factors affecting process selection. 2.2.2 Technology life cycle 2.2.3 Producibility-concept & importance; flexibility.</p> <p>2.3 Facility location : 2.3.1 Concept, steps in facility location, factors affecting selection of location;</p> <p>2.4 Facility layout and handling means : 2.4.1 Importance, objectives, types.</p> <p>2.5 Capacity Planning :</p> <p>2.5.1 Concept, need, importance, base, method to assess/estimate capacity. 2.5.2 Flexibility in capacity planning-need.</p>
<p>3.</p>	<p>SSI AND ITS PROMOTIONAL AGENCIES</p> <p>3.1 SSI-definition, Government Policy—need and importance. 3.2 Ancillary-Need and importance. 3.3 Promotional Agencies—their role and types of promotions, various agencies.</p>

4.	<p>MANAGING CRITICAL RESOURCES</p> <p>4.1 7.M resources; Managing finance : terminology in finance management.</p> <p>4.2 Concept of balance sheet and funds flow statement; managing working capital—its importance.</p> <p>4.3 Sources of finance—types advantages and disadvantages.</p> <p>4.4 Cost control & importance , methods.</p> <p>4.5 Managing human resource :</p> <p>4.5.1 Organization structure-types and suitability; criteria for recruitment and selection.</p> <p>4.5.2 Need for training and motivation.</p> <p>4.5.3 Delegation of authority and span of control.</p> <p>4.6 Materials Management :</p> <p>4.6.1 Need, MRP, purchasing decisions and procedures; work controls and its importance.</p> <p>4.6.2 JIT—Concept, importance and application.</p> <p>4.7 Time Management :</p> <p>4.7.1 Importance, Managing delivery schedule opportunity cost concept and application</p> <p>4.7.2 Information Systems : need, importance, Communication channels and Media.</p>
5.	<p>PROJECT PLANNING AND PROJECT REPORT</p> <p>5.1 Meaning of project planning and report; feasibility study; steps in project planning, project cost estimation; CVP relationship at different stages of operation; project execution.</p> <p>5.2 Preparing and submitting project report; interpret a project report</p>
6.	<p>MANAGING ENTREPRISE</p> <p>6.1 SWOT (strength, Weakness, opportunity and Threat) analysis— Meaning and importance.</p> <p>6.2 Strategies to set and achieve goals.</p> <p>6.3 Formal and non-formal aids.</p> <p>6.4 Benefits to an enterprise including financial; source—types of aids / benefits.</p> <p>6.5 Leadership importance.</p> <p>6.6 Dealing with Government/non Government bodies.</p> <p>6.7 Budgeting—need importance, Control and allocation.</p> <p>6.8 Marketing channels—need and selection criteria.</p>
7.	<p>RISK MANAGEMENT :</p> <p>7.1 Introduction; Concept of risk, uncertainty and certainty .</p> <p>7.2 Decision making under risk; Decision tree; Simulation; concept and application of sensitivity analysis.</p> <p>7.3 Decision making under uncertainty; Methods to deal with</p>

TGT603:ELECTRONIC PRACTICE

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 40 marks and PA for 60 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT603	ELECTRONIC PRACTICE	0	4	4	00	00	40	60	100

Content:

After completing this course students should be able to –

1. Measure voltage, current, frequency, power, power factor for single and three-phase supply
2. Wire fan, tube light, two-way control (staircase wiring).
3. Wire instrument panel with various accessories following standard codes.
4. Wire MCB, ELCB for a given load circuit
5. Preparing the drawing for wiring a newly built room, without any electrical wiring along with a bill of materials with specifications; the room may be a class-room, an office, a shop, a clinic, a small workshop etc
6. Compare specification for different types of tools (electrical, mechanical, pneumatic, hydraulic), wires, cables (and tubing), switches, batteries, connectors and sockets, electronic components (active, and passive), PCB, fuses, for a given application
7. Draw electrical/electronic circuit diagram using IEEE standard symbols.
8. Identify and rectify open circuit, and short circuit faults in PCB/System
9. Solder and de-solder electronic components on different types of PCB
10. Test assembled electronic circuit for various parameters and faults
11. Identify and test electrical/electronic active and passive components
12. Use basic source and measuring instruments (power supply, function generator, CRO, DMM)
13. Identify various types of ports and connectors
14. Different type of switches like limit switch, proximity switch, push switch.

Reference Books:

1. Electronic Principles, Albert Malvino and David J Bates, Mc Graw Hill(7th Edition)
2. Electronic Devices, Thomas L. Floyd, Pearson (7th Edition)
3. Electronic Devices and Circuits, David A. Bell, Oxford Press (5th Edition)
4. Integrated Electronics, Jacob Millman, Christos, Tata McGraw Hill (2nd Edition)

List of Experiments:

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills so that students are able to acquire the competency. Following is the list of experiments for guidance.

As it is laboratory course list is as per content given above

Suggested List Of Student Activities:

1. Collect various types of components and prepare chart/model
2. Collect specifications of similar types of tools and instruments and prepare report comparing them.
3. Assemble one electronic system on PCB, test, and demonstrate in functioning (mini – project given by faculty member)

Open Ended Problems: Apart from above experiments a group of students has to undertake open ended problem/design problem. Few examples of the same are given below.

1. To DESIGN a device for charging small battery during door opening and closing using Coil and/or Magnet based DAMPING mechanism.
2. To DESIGN a Passive method for cooling laptops by diverting the heat produced on to the un-utilized (TOP) surface of the laptop.
3. To DESIGN a mobile charger using Solar PV cell panel for offices and house hold. (The conventional charger may be eliminated).
4. To DESIGN/DEVELOP an INNOVATIVE electronic weighing machine.
5. To DESIGN develop an electronic lock for house in the workshop
6. To DESIGN/DEVELOP an innovative electrical bell using electronics components in the workshop.

Major**Equipments:****Components:**

Various types of resistors, capacitors, inductors, diodes, transistors, wires, cables, connectors, batteries, switches, relays, etc

Tools:

Pliers, cutters, strippers, screw driver, crimping, soldering iron, de-soldering pump, hot-air soldering and de-soldering station, multi-meter, tester, series lamp, megger, clamp-on-meter

Instruments:

1. CRO (At least 20MHz)
2. Function Generator (Frequency range upto 20 MHz) – need to have sine, square wave output.
3. Dual Power Supply (0-12V/15V DC)/3A
4. Micrometers for measurement of voltage and current with suitable ranges.
5. Multimeter
6. Megger
7. Clamp – on – meter
8. Soldering and de-soldering station
9. Various electrical and electronic tool kits for testing and assembly.

TGT604:INDUSTRIAL PRACTICE AT SPINNING

TEACHING AND EVALUATION SCHEME: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis ESE for 160 marks and PA for 240 marks.

Course Code	Course Title	Credit		Total	Marks				Total
		Th.	Pra/Field		Th.		Practical		
					I	E	ESE	PA	
TGT604	INDUSTRIAL PRACTICE AT SPINNING	0	18	18	00	00	160	240	400