Hemchandracharya North Gujarat University,

Patan

# Community College

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 Community Colleges (CC) to serve multiple needs, including (i) career oriented education and skills to students interested in directly entering the workforce; (ii) contracted training and education programmes 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. Community College will have with multiple exits such as Diploma/Advanced Diploma under the NSQF(National Skills Qualifications Framework).

The Community College 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/Field | | 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 RESOURSE 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 |

**CCTGTR1 : "Eligibility Criteria (EC)" for Admission**

1. The eligibility conditions for admission to CC program shall be 10+2 or equivalent in any stream
2. There is no age bar for admission to CC
3. The student can take exit to these courses 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.

**CCTGTR2: Admission Procedure**

1. For admission to the programmes offered by the CCs, 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. There shall be no age bar for admission in the Community Colleges.
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.

**CCTGTR3: 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.
3. In order to motivate students to join courses under the scheme, an amount of Rs. 1,000/- per month should be provided to the students under this scheme. This should be paid based on satisfactory attendance.

**CCTGT R4: 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.

**CCTGT R5: 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

## CCTGT R6: EVALUATIONS:

1. Appropriate mechanism for assessment of the learners' progress towards acquisition of knowledge and skill should be developed by the Community Colleges. 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 CC 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 80 marks out of which, 40 marks shall be for Continuous evaluation (Exams) and 40 marks for the end semester examination. An end semester examination shall be of 2 hours duration.
5. Practical of Each core paper will be evaluated for a maximum of 120 marks out of which, 90 marks shall be continuous internal evaluation and 30 marks for the end semester viva examination.
6. Each Elective paper is evaluated for a maximum of 100 marks which will be evaluated internally by continuous evaluation.

### CCTGT R7: 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 | | |

**CCTGT R8: 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.

$$SPI = \frac{g1\,c1 + g2\,c2 + \ldots}{c1 + c2 + \ldots.}$$

Where, g 1 , g 2 ……. are the Grade points obtained by the student in the Semester, for Courses carrying Credits c 1 , c 2 …….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 PERFOMANCE 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.

**CCTGT R9: 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.

**CCTGT R10: 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 |

**CCTGTR11: AWARD OF GRADING / DIVISION:**

No class/ division will be awarded to the students in the first 3 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 |

**CCTGT R12: 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 |
|---|---|---|---|---|
| 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**
**Community college**
**'Textile and ginning technology' Semester - I**
**External Examination, November, 2014**
**Subject:**

**Time: 2 hrs** **Date** **Maximum marks: 60**

**Q.1 Answer any10 questions. Each question carries 1 mark**
**(10*1=10 Marks)**
**(OBJECTIVEQUESTIONS)**

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 examixnation 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 | ESE | 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**<br><br>**INTRODUCTI ON TO WORKSHOP** | 1.1 Sketch general workshop layout.<br>1.2 Follow preliminary safety rules in workshop. | 1.1 Workshop layout.<br>1.2 Importance of various sections/shops of workshop.<br>1.3 Types of jobs done in each shop.<br>1.4 General safety rules and work procedure in workshop. |

| | | |
|---|---|---|
| **UNIT – 2**<br><br>**FITTING** | 2.1Select appropriate fitting tools for the required application.<br>2.2Prepare the simple jobs as per specification using fitting tools. | 2.1 Sketch, specification and applications of fitting work holding tools-bench vise, V-block with clamp and C-clamp.<br>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, scriber, divider, centre punch, letter punch, calipers, vernier caliper, etc.<br>2.3 Types, sketch, specification , material , applications and methods of using of fitting cutting tools-hacksaw, chisels, twist drill, taps, files, dies.<br>2.4 Types, sketch, specification, material, applications and methods of using of fitting finishing tools-files, reamers.<br>2.5 Sketch, specification and applications of miscellaneous tools-hammer, spanners, screw drivers sliding screw wrench.<br>2.6 Demonstration of various fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping.<br>2.7 Preparation of simple and male- female joints.<br>2.8 Safety precautions. |

| | | |
|---|---|---|
| **UNIT – 3**<br>**TIN SMITHY** | 3.1Select appropriate tin smithy tool for the required application.<br>3.2Prepare the simple job as per specification using tin smithy tools. | 3.1 Concept and conversions of SWG and other gauges in use..<br>3.2 Use of wire gauge.<br>3.3 Types of sheet metal joints and applications.<br>3.4 Types, sketch, specification, material, applications and methods of using tin smithy tools-hammers, stakes, scissors/snips, etc.<br>3.5 Demonstration of various tin smithy tools and sheet metal operations such as shearing, bending and joining.<br>3.6 Preparation of tin smithy job.<br>3.7 Safet y precauTions. |
| **UNIT – 4**<br>**CARPENTRY** | 4.1Select appropriate carpentry tool for the required application.<br>4.2Prepare the simple job as per specification using carpentry tools. | 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.<br>4.2 Types of woods and their applications.<br>4.3 Types of carpentry hardwares and their uses.<br>4.4 Demonstration of carpentry operations such as marking, sawing, planning, chiseling, grooving, boring, joining, etc.<br>4.5 Preparation of wooden joints.<br>4.6 Safety precautions. |
| **UNIT – 5**<br>**PIPE FITTING** | 5.1 Select appropriate pipe fitting tool for the required application.<br>5.2 Prepare the simple job as per specification using pipe fitting tools. | 5.1 Types, specification, material and applications of pipes.<br>5.2 Types, specification, material and applications of pipe fittings.<br>5.3 Types, specifications, material, applications and demonstration of pipe fitting tools.<br>5.4 Demonstration of pipe fitting operations such as marking, cutting, bending, threading, assembling, dismantling, etc.<br>5.5 Types and application of various spanners such as flat, fix, ring, box, adjustable, etc.<br>5.6 Preparation of pipe fitting jobs.<br>5.7 Safety precautions. |
| **UNIT – 6**<br>**METAL JOINING** | 6.1Select appropriate equipment and consumables for required application.<br>6.2Prepare the simple jobs as per specification using proper metal joining and cutting method. | 6.1 Types, specification, material and applications of arc welding transformers.<br>6.2 Types, specification, material and applications of arc welding accessories and consumables.<br>6.3 Demonstration of metal joining operations-arc welding, soldering and brazing. Show effect of current and speed. Also demonstrate various welding positions.<br>6.4 Demonstrate gas cutting operation.<br>6.5 Preparation of metal joints.<br>6.6 Safety precautions. |

| | | |
|---|---|---|
| **UNIT – 7** | Basic machine<br>Lathe machine<br>Drilling machine<br>Shaper machine<br>Milling machine | 7.1 Job on lathe<br>7.2 Job on Drilling machine<br>7.3 job on shaper & milling machine. |

## 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. |

**REFRENCE 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 | ESE | 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

## Refrancence 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 | ESE | 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 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 | |
| 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 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 | |
| TGT106 | SPINNING PROCESS 1 | 2 | 2 | 4 | 30 | 50 | 40 | 80 | 200 |

**Topic 1: Principles of Spinning**

1.1Cleaning 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**

2.1Carded Material Process

2.2Combed Material Process

2.3Blended Yarn Process

2.4Limitations of Carded Material Process

2.5Benefits 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 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 | |
| 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.<br>1.2Measure given dimensions by using appropriate instruments accurately.<br>1.3Calculate error in the measurement<br>1.4Solve numerical based on above outcomes | **SI Units & Measurements**<br>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,<br>fundamental and derived quantities and their units<br>1.2 Least count and range of instrument, least count of vernier caliper, micrometer screw gauge<br>1.3 Definition of accuracy, precision and error, estimation of errors -absolute error, relative error and percentage error, rules and identification of significant figures.<br>(Numerical on above topics) |
| **Unit– II** | 2.1 List Newton's laws of motion<br>2.2 Differentiate among various forces in nature<br>2.3 Define inertia, momentum and impulse of force<br>2.4 State Newton's laws of motion<br>2.5 State law of conservation of momentum<br>2.6 Solve numerical problems based on above topics | **Force and Motion:**<br>Recapitulation of equations of motion, Newton's Ist 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 IInd law of motion, measurement of force using second law, simple problems on F = ma and equations of motion,<br>Impulse of force, Impulse as the product of force and time, impulse as the difference of momentum, examples of impulse, simple problems on impulse,<br>Newtons IIIrd law of motion and its examples. Law of conservation of momentum, Statement, simple problems<br>(Numerical on above topics) |
| **Unit– III** | 3.1Comprehend the concept of elasticity and Define Stress, Strain and Elastic limit. | **General properties of matter**<br>**3.1 Elasticity**<br>Deforming force, restoring force, elastic and plastic |

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| | 3.2State Hooke's law.<br>3.3Explain the term elastic fatigue.<br>3.4Distinguish between Streamline and Turbulent flow<br>3.5Define coefficient of viscosity.<br>3.6Apply the principle of viscosity in solving problems.<br>3.7State significance of Reynold's number<br>3.8Explain terminal velocity.<br>3.9Mention Stoke's formula.<br>3.10Explain the effect of temperature on viscosity<br>3.11Comprehend the phenomenon of surface tension and its applications.<br>3.12Define surface tension.<br>3.13Explain angle of contact and capillarity.<br>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.<br>**3.2 Surface Tension.**<br>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<br>**3.3 Viscosity**<br>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).<br>(Numericals on Above topics) |
| **Unit– IV** | 4.1Distinguish between Heat and Temperature.<br>4.2Explain modes of Transmission of heat and their applications.<br>4.3Define heat capacity and specific heat of substances.<br>4.4Explain temperature<br>4.5List various temperature scales and convert among temperatures | **Heat Transfer**<br>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.<br>4.2 Heat capacity and specific heat of materials<br>4.3 Celsius, Fahrenheit and Kelvin temperature scales and their conversion formulae<br>(Numericals on above topics) |
| **Unit– V** | 5.1 Comprehend the concept of wave motion<br>5.2 Distinguish between transverse and longitudinal waves.<br>5.3Define period, frequency, amplitude and wavelength<br>5.4Explain principle of superposition of waves<br>5.5Define resonance<br>5.6Explain resonance.<br>5.7State Formula for velocity of sound in air<br>5.8Comprehend the Importance of Reverberation<br>5.9State Sabine's formula and Factors affecting Reverberation time<br>5.10Explain ultrasonic waves. Mention applications of | **Waves and Sound**<br>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<br>**Ultrasonic Waves**<br>Definition, Properties of ultrasonic waves Uses of ultrasonic waves.<br>**Acoustics Of Building**<br>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.<br>(Numericals on above topics) |

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| | ultrasonic waves | |
| **Unit– VI** | 6.1 State Properties Of Light<br>6.2 Define various phenomena of light<br>6.3 State Snell's law of refraction.<br>6.4Explain importance and list applications of nanotechnology in engineering field | **Light and Nanotechnology**<br>Properties Of Light, Electromagnetic spectrum, Reflection, refraction, snell's law, diffraction, polarization, interference of light, constructive and destructive interference (Only definitions),<br>physical significance of refractive index, dispersion of light<br><br>Introduction to Nanotechnology<br>(Numericals on above topics) |
| **Unit – VII** | 7.1Define radio activity<br>7.2Distinguish between Natural & Artificial radioactivity<br>7.3State relation between Half Life, Average Life & Decay Constant.<br>7.4Describe properties of Alpha, Beta and Gamma rays. | **Radioactivity**<br>**7.1 Radioactivity**<br>Definition, Natural & Artificial radioactivity, Units and Laws of Radioactivity, Half Life, Average Life & Decay Constant.<br>**7.2 Radioactive Rays**<br>Properties and uses of alpha particles, beta particles and gamma rays<br>(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 | ESE | 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:<br>Test lamp. 2: line tester. 3: Multimeter. 4: Clamp-on |
| 5 | I | Connect different domestic appliances to power supply and measure<br>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<br>a. Tube light wiring<br>b. Stair case wiring<br>c. Godown wiring<br>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 | ESE | 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 examixnation for 60 marks

| Course Code | Course Title | Credit | | Total | Marks | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Th. | Pra/Field | | Th. | | Practical | | |
| | | | | | I | E | ESE | 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 | ESE | 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 | ESE | 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 RESOURSE 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 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 | |
| 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 RESOURSE 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 examixnation for 60 marks

| Course Code | Course Title | Credit | | Total | Marks | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Th. | Pra/Field | | Th. | | Practical | | |
| | | | | | I | E | ESE | PA | |
| TGT302 | HUMAN RESOURSE 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**<br><br>**Introduction** | 1.a Appreciate importance of human resource | 1.1 Need and scope of human resource management in industrial environment.<br>1.2 Impact of human factors on productivity and industrial harmony.<br>1.3 Importance of providing need based training to the man power.<br>1.4 Qualities of a good supervisor. |
| **Unit II**<br><br>**Human needs, relations and values** | 2.a Identify human motivations. | 2.1 Importance of human resources in Indian philosophy.<br>2.2 X and Y theory.<br>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.<br>2.5 Good relations with the suppliers and clients.<br>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.<br>3.2 Determinants of interpersonal behaviour.<br>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.<br>3.5 Dynamics of group formation.<br>3.6 Types of groups.<br>3.7 Role of teams in an organization.<br>3.8 Desirable characteristics of a team member.<br>3.9 Concept & importance of positive attitude and openness of mind.<br>3.10 Do's and don'ts for developing positive attitude.<br>3.11 Importance of mental health. |
| **Unit IV**<br><br>**Leadership Development** | 4.a Use leadership qualities.<br>4.b Develop subordinates by motivations & training.<br>4.c Develop decision | 4.1 Various definitions of leadership.<br>4.2 Situational approach to leadership.<br>4.3 Quality of a good leader.<br>4.4 Power influence and compliance.<br>4.5 Influence of Leadership.<br>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)).<br>4.8 Need, importance & types of oragnisational training.<br>4.9 Need and importance of motivations.<br>4.10 Changing role of supervisor as facilitator& motivator.<br>4.11 Need, importance and use of guidance, mentoring, coaching and counselling.<br>4.12 Importance of problem solving and decision making in context of productivity, quality, cost consciousness, human relations and goal achievement.<br>4.13 Factors affecting decision making.<br>4.14 Types and process of decision making.<br>4.15 Make the decisions for given case/situation. - case studies. |

| | | |
|---|---|---|
| **Unit V**<br><br>**Change and stress management.** | 5.a Identify need for change and barriers to change.<br>5.b Suggest strategies for any change.<br>5.c Resolve conflicts. | 5.1 Need for change.<br>5.2 Barriers to change.<br>5.3 Strategies and tools to manage change.(Effective implementation and management of change). - case studies.<br>5.4 Trade unions and their objectives.<br>5.5 Constructive role of trade unions in goal setting, achievement and change management.<br>5.6 Causes of conflicts and techniques to resolve conflicts - case studies. |
| | 5d. Analyse stress situation<br>5e. Manage stress. | 5.7 Concept of stress.<br>5.8 Causes of stress.<br>5.9 Stress measuring techniques.<br>5.10 Need for relieving stress.<br>5.11 Techniques to manage the stress- case studies.<br>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-MRVd1okhttp://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 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 | |
| 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 | ESE | 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 | ESE | 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 | ESE | 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<br>1.2 Correlate the facts of ecology and environment A<br>1.3 assess the effect of pollution<br>1.4 List the causes of environmental pollution<br>1.5 State the major causes of air, water and noise pollution<br>1.6 Describe how industrial waste contaminates the land<br>1.7 Describe the effects of radiation on vegetables, animals | 1.1 Importance of environment and scope<br>1.2 Engineering and environment issues<br>1.3 The natural system, Biotic and a-Biotic components and processes of natural system<br>1.4 Eco system, food chain and webs and other biological Systems,<br>1.5 Causes of environmental pollution<br>1.6 Pollution due to solid waste<br>1.7 water pollution, air pollution, the Noise as pollution,<br>1.8 Pollution of land due to industrial and chemical waste<br>1.9 Radiation and its effects on vegetables and animals |
| **Unit– II Sustainable Development** | 2.1 Explain the concept of sustainable development<br>2.2 Justify the need for renewable energy<br>2.3 Describe the growth of renewable energy in India<br>2.4 Explain the concepts of waste management and methods of recyling | 2.1 Concept of sustainable development,<br>2.2 Natural resources, a-biotic and biotic resources<br>2.3 Principles of conservation of energy and management<br>2.4 Need of Renewable energy<br>2.5 Growth of renewable energy in India and the world<br>2.6 Concept of waste management and recyling |

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

## 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
l 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 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 | |
| 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 Condesor

**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 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 | |
| TGT402 | SPINNING MACHINERY MAINTENANCE | 2 | 4 | 6 | 30 | 50 | 40 | 80 | 200 |

**Topic 1: Blow Room and Carding Machinery**

1.1Blow 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 | ESE | 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 inYarn

**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 | ESE | 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 Euipment

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 inYarn

# 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 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 | |
| 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 | ESE | 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