RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, III-Semester

FABRIC MANUFACTURING I

COURSE OBJECTIVE:

1. The students will be able to correctly describe the working principles of primary and secondary motions of the loom and can manufacture fabrics as per the required quality and specifications.
2. The students will be able to correctly describe the working principles of sizing m/c and can manufacture weavers beam as per the required quality and specifications.
3. The students will be able to identify and prepare size paste recipes for natural and synthetic yarns correctly.

COURSE CONTENT:

Objects of sizing, method of size preparation, details of slasher sizing and multicylinder sizing machines size ingredients detailed study of various drying systems, measuring and marking motion, drive, modification of size box, size level control, size viscosity and take-up, moisture, stretch and tension control.

Single end sizing – features and application, Sizing of manmade, blends, continuous filaments and textured yarn. Production efficiency and other related calculations.

Principles of weaving. Primary, Secondary an Auxiliary motions. Shedding – its various types and devices, positive and negative shedding, shedding tappets of different types, heald reversing motions, early and late shedding, shed troughing and heald staggering.

Pickin classification, mechanism of Over and Under pick motions, picking tappets, shuttle speed, shuttle checking devices, causes of shuttle flying and shuttle trap. Beat-up sley movement, sley eccentricity and its effect, factors affecting sley movement, double beat-up, Timing diagram of primary motions.

Classification of take-up motion, 5 and 7 wheel take-up motion, Negative let-off motion and its related calculations, Causes of pick spacing variation. Temples-types and uses.

COURSE OUTCOMES:

Upon completion of the course the student shall be able to

1. The students are able to correctly describe the working principles of primary and secondary motions of the loom and can manufacture fabrics as per the required quality and specifications.
2. The students are able to correctly describe the working principles of sizing m/c and can manufacture weavers beam as per the required quality and specifications.
3. The students are able to identify and prepare size paste recipes for natural and synthetic yarns correctly.

EVALUATION:

Evaluation will be continuous an integral part of class.

REFERENCES:

1. Talukdar MK &.Ajgaonkar D.B; Sizing- Materials, Machines & Methods.
2. Aswani; Plain Weaving Motions.
3. Loom Shed-BTRA Silver Jubilee Monograph Series
4. Bannerjee NN; Weaving Mechanism Vol. –1.
5. Talukdar MK; Weaving Marks & Robinson; Principles of Weaving.
6. Fox; Weaving Mechanism.
7. Paul V. Seydel; Textile Warp Sizing
8. Cotton Warp Sizing Hand book – E.F. Houghton & Co.
9. Sizing – The Key Stone for Quality Fabric; TAI Pub.
10. Woven Fabric Production Vol. I; NCUTE Study Material.
11. Corbman; Textiles- fiber to fabrics; TMH.

List of Experiments (Pl. expand it):

Detail study of sizing machines.
Detailed study of primary and secondary motions of a plain loom

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Textile Engineering, III-Semester

WEAVING PREPARATION

COURSE OBJECTIVE:

1. The students will be able to correctly describe the working principles of different winding m/c and can prepare cone or cheese as per the required quality and specifications.
2. The students will be able to correctly describe the working principles of different warping m/c and can prepare warp beam as per the required quality and specifications.
3. The students will be able to correctly describe the drawing in process.

COURSE CONTENT:

Object of Winding, classification of winding machines. Different types of Winding machines their uses and limitations, tensioning devices, yarn clearers Types and features classification of yarn faults, yarn traversing devices, yarn stop Motion, ribbon formation causes and method of its elimination. Passage of yarn On slow speed and high speed automatic winding machines.

Different features of Automatic high speed winding machines, splicing- mechanism and advantages, Various parameters of package and Package build and their relationship, Related calculations.

Weft Winding - different types, yarn guides and traverse , yarn tension control and Yarn stop motion , auto doffing, bunching, package length and diameter, package Build, winding and binding coil ratio.

Object of warping, classification of warping machines beam warping and sectional Warping measuring motion, stop motions, yarn tensioning, creel types and features, Leasing and beaming, Features of modern high speed warping machines.

Drawing-in: Manual, automation, knotting and gaiting, Calculations, production, efficiency and waste related to winding and warping processes, Maintenance of the machines studied.

COURSE OUTCOMES:

Upon completion of the course the student shall be able to

1. The students are able to correctly describe the working principles of different winding m/c and can prepare cone or cheese as per the required quality and specifications.
2. The students are able to correctly describe the working principles of different warping m/c and can prepare warp beam as per the required quality and specifications.
3. The students are able to correctly describe the drawing in process.

EVALUATION:

Evaluation will be continuous an integral part of class.

REFERENCES:

1. Talukdar MK; Winding & Warping.
2. Ormerod A; Modern Preparation and Weaving Machinery.
3. BTRA Silver Jubilee Monograph Series; Warping & Sizing
4. BTRA Silver Jubilee Monograph Series; Winding.
5. Sengupta; Weaving Calculation.
6. Ormerod & Walter S. Sondhelm; Weaving Technology and Operations.

LIST OF EXPERIMENTS (PL. EXPANDS IT):

1. Study of cheese & cone winding m/c,
2. Winding tensions and yarn clearer gauge Levels,
3. Details study of non automatic weft winding machines.
4. Detail study of Warping, adjusting points and Drawing-in operations.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, III-Semester

YARN MANUFACTURING I

COURSE OBJECTIVE:

1. Student will be able to identify and evaluate the processing of various fibres on B/R.
2. Student will be able to identify and evaluate the processing of various fibres on Cards.
3. Student will be able to demonstrate their conceptual knowledge to solve the problem in B/R and Card.
4. Student will be able to investigate the reasons of various problems and their solution in B/R and Card.

COURSE CONTENT:

Ginning of cotton fibres, Different types of ginning, roller ginning, saw ginning and importance of the ginning to eliminate the contamination in the yarn, the scenario of Indian ginning industries.

Blow Room, Objects of blow room. Principles of opening , cleaning and blending . Preparation of uniform lap, principal of blow room machines and blow room lines , recent developments in blow room machinery including automatic bale openers , blenders and chute feed systems, optical color material detectors, dust removal etc. Assessment of blow room performance, environmental condition, man-made fibre processing.

Calculation of blow room production, Process parameters of different machines for different materials, Different settings and speeds, General idea of defects and remedies in blow room, Maintenance schedule and important supervisory check points at blow room.

Carding – Object of carding, principles of working, construction and working of different parts of the card, type of card clothing, Developments of card wires. Development of modern cards-concept of chute feed, factors influencing the design of carding machines, elements and effect of their speed on carding performance. General idea of speed, setting and their impact on both natural and man – made fibre processing. Assessment of card performance – cleaning efficiency, waste %, production, draft etc. and quality aspects of carded material. Environmental condition, Concept of coiling, General idea of defects and remedies in card.

Characteristics of manmade fibres, blending and objectives, types of blending, processing of manmade fibres in blow room and carding and calculation related to material selection, Idea of fibre distribution yarn s, factors affecting the blend irregularity, Processing of dyed fibres, difficulties in blow room and carding.

COURSE OUTCOMES:

Upon completion of the course the student shall be able to

1. Apply their knowledge on the production, processing of various fibres and analyse the problem of various faults occurring in B/R and carding m/c.
2. Apply their knowledge for setting of m/c on the various fibres
3. Solve the reason of various problems and their solution in B/R and carding m/c.

EVALUATION:

Evaluation will be continuous an integral part of class.

REFERENCES:

1. Text Inst; Manual of cotton Spinning Vol. I, II.
2. Khare AR; Element of Raw Cotton and Blow room.
3. Khare AR; Elements of Carding and Drawing
4. Salhotra KR; Processing of Manmade and blends on Cotton System.
5. Gilbert Merrill; Cotton opening and picking.
6. Gilbert Merrill; Cotton carding.
7. Klein; Technology of Short Staple Spinning.
8. Klein; Practical guide to opening and carding.
9. Venkatasubramani; Spun Yarn Technology, Vol. I Blow room.
10. Venkatasubramani; Spun Yarn Technology, Vol. II Carding.
11. Pattabhiram; Essentials of Practical Cotton Spinning.
12. Szaloki ZS; High Speed Carding & Continuous Card Feeding.
13. Chattopadhyay R; Technology of Carding.
14. Pattabhiram TK; Spinning Processing Methods of Man Made Fibres.

List of Experiments (Pl. expand it):

1. An elaborate study of blow room and machine.
2. Constructional details, setting & gauging
3. Controls & change places.
4. Calculations of speeds, drafts, production.

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Choice Based Credit System

Textile Engineering, III-Semester

FIBRE SCIENCE

COURSE OBJECTIVE:

1. Student will be able to correctly demonstrate the principle and manufacturing process of natural and manmade fibre.
2. Students will be able to recall correctly the various properties of different natural and manmade fibre.
3. Student will be able to understand the structural properties of fibre.

COURSE CONTENT:

General classification of fibres. Structure, properties and uses of cotton. Structure, properties and uses of bast fibers, Structure, properties, uses and brief description of wool and silk fibres.

Basic concept of polymer, their classification, methods of polymerization, molecular weightits measurement, distribution and importance.

Manufacturing process of all important man-made fibres e.g. rayon, nylon, polyester, acrylic, poly-olephins etc. with special reference to melt, dry and wet extrusion principle. Idea about the physical and chemical properties (influence of chemical constituents and different groups present) of above mentioned fibres and their uses.

Problems associated with man-made fibres and their methods of rectification. Structure of fibres- basic requirements for fiber formation, concept of order and morphology, molecular packing in crystalline and amorphous regions,

physical structure of principal natural and man-made fibers . Study of fiber structuresmethods of investigating fiber structures e.g. X-ray diffraction, optical and electron microscopy , I R absorption, thermal methods NMR.

COURSE OUTCOMES:

Upon completion of the course the student shall be able to

1. Explain the correct manufacturing process of various natural and manmade fibre.
2. Identify and evaluate the properties of different natural and manmade fibre accurately.
3. Be able to demonstrate their knowledge on various fibres and their properties.

EVALUATION:

Evaluation will be continuous an integral part of class.

REFERENCES:

1. Shennai VA; Fibre Science.
2. Vaidya Synthetic Fibre
3. Gupta & V. K. Kothari; Manufactured Fibre Technology.
4. Morton & JWS Hearle; Physical Properties of Textile Fibre
5. Murthy HVS; Introduction to Textile Fibre.
6. Ghosh; Fibre Science and Technology; TMH

7. Moncrieff; Man made Fibres.
8. Gohl and Vilensky LD; Textile Science
9. Fried JR; Polymer Science and Technology
10. Mukhopadhyay SK; Advances in Fibre Science.
11. Mishra SP; A text book of Fibre Science & Technology
12. Jayaprakasam et.al; Fibre Science & Technology.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, III-Semester

Dyeing preparation

COURSE OBJECTIVE

1. Students will be able to use effectively principles and mechanisms of pre-treatment processes on textile goods.
2. Students will be able to dye different types of fabric accurately according to requirement.

Sequence of chemical processing of textiles,
Singeing: Objective of singeing; Plate, roller and gas singeing, singeing with enzyme
Desizing: Objective of desizing; Hydrolytic desizing- Rot steep, acid steep and enzymatic desizing; Oxidative desizing- Chlorine desizing, chlorite desizing, bromite desizing, desizing with peroxy compounds; method of evaluation of desizing efficiency

Scouring: Objective of scouring of cotton, Chemical composition of cotton fiber, saponification, emulsification, Chemicals and auxiliaries used in scouring, Kier boiling: open and closed kier; Scouring of grey cotton yarn and fabric; Scouring of grey colored woven goods; enzymatic scouring; method of evaluation of scouring efficiency

Mercerization: Objective of mercerization, action of alkali on the morphological/fine structure of cellulose, Chain mercerization and chainless mercerization, Mercerization process using sodium hydroxide and liquid ammonia; method of evaluation of mercerization efficiency: Barium activity number

Bleaching: Objective of bleaching, oxidative and reducing bleaching agent, Bleaching process of cotton using bleaching powder, sodium hypochlorite, hydrogen peroxide and sodium chlorite; various bleaching parameters and their effects; role of chemicals used in bleaching; continuous scouring and bleaching
Optical brightening agent: Chemical composition, mechanism and their method of application
Souring: Objective and advantages

Preparation of woolen goods: Scouring of wool: Objective of scouring of wool, Chemical composition of wool fiber, Classification of different wool scouring process, chemicals and auxiliaries used in wool scouring
Degumming of silk: Objective of silk degumming, Chemical composition of silk fiber, Chemicals and auxiliaries used in silk degumming, silk degumming process
Singeing; Heat setting of synthetic and blended fabric

COURSE OUTCOMES

Upon completion of the course the student shall be able to

1. Apply various principles and mechanisms of pre-treatment processes in textile wet processing.
2. Differentiate the various chemicals used in the preparatory and Dyeing processes and utilize them according to end use

References:

1. Shennai; Scouring And Bleaching
2. Trotman; Textile Scoring & Bleaching;
3. J T Marsh; Mercerization

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering , III-Semester

Communication Skills

Introduction: Communication, definition and role of communication, Process of communication, Importance of professional communication, Levels of communication, Types of communication, Challenges in communication. Non –verbal communication – Body language, personal appearance, posture, gesture and hand movement, eye contact, facial expressions, paralinguistic features - proxemics, haptics, chronemics. Oral presentations. Case studies.

Books recommended:

1. Business Communication, Mc Graw Hill Education, Matthukutty M. Monippally.
2. Effective Business Communication , Mc Graw Hill Education, Neera Jain, Shoma Mukherji.
3. Technical Communication , Cengage , P. Subba Rao, B. Anita Kumar, C. Hima Bindu.
4. Business Correspondence & Report Writing , Mc graw Hills. , R.C. Sharma & Krishna Mohan .
5. Technical Communication – Principles & Practice , Oxford , Meenakshi Raman.
6. Business Communication- Mc graw Hills , Peter Cordom.
7. Communication Skills , Oxford , Sanjay Kumar & Pushpa TMH.
8. Effective Technical Communication , M. Ashraf Rizvi ,Mc Graw Hill Education.

Language Lab II

Module 1 : Reading comprehension
Module 2 : Role plays
Module 3 : Debate
Module 4 : Group discussion
Module 5 : Resume writing
Module 6 : Interview skills
Module 7 : Body language
Module 8 : Oral presentations