RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, IV-Semester

YARN MANUFACTURING -II

COURSE OBJECTIVE:

1. To explain the concept of drafting and how the different process parameters influence the drafting process and the different type of drafting systems, necessary settings, technical parameters, monitoring and auto-leveling systems and modern developments in draw-frames.
2. To illustrate the objectives of combing operation, working and constructional features of a modern rectilinear comber, necessary settings, technical parameters and calculations related to production, noil % etc.
3. To describe the constructional features, principle of operation and objectives of a modern speed-frame and explain it's necessity in the context of ring-spinning system.

Draw frame Object of drawing, constructional details of draw frame, concept of perfect drawing, different drafting systems, monitoring and auto leveling of irregularities.

Draw frame blending, recent developments, performance assessment, idea of setting, speed and other technical parameters. Calculations related to draft, production etc. Defects and remedies, supervisory check points.

Combing Lap preparation, Lap former, setting, speed and recent developments, production calculations, Methods of Lap preparations and its importance.

Object of combing, construction and principle of working, function of different motions, combing cycles, different types of combers, different setting points and speeds. Calculation related to production, noil %, draft etc. Recent developments, assessment of comber performance, control of waste, Defects and remedies, supervisory check points.

Speed frame Object of speed frame, construction and principle of working, details of speed frames. Drafting, twisting winding and building mechanism, Speed and setting points, latest developments, Different types of flyers and suspended type of speed frame Calculation related to speed, draft, production, performance assessment, defects and remedies, supervisory check points.

COURSE OUTCOME:

Upon completion of the course the student shall be able to

1. Graduates will be able to comprehend the principles of operation of any type of drafting systems/draw-frames and thereby effectively alter or modify the process parameters, so as to meet the desired level of outcome.

2. Graduates will be able to examine the characteristics of a lap suitable for the combing operation and accordingly modify the different settings of the lap former machine so as to achieve the desired objectives.
3. Graduates will be able to interpret the operations of different types of combing machines and calculate their performance level for the production of superior quality combed yarn in terms of cost and productivity.
4. Graduates will be able to infer the necessity of the roving-frame in the context of ring-spinning system and effectively operate the different types/models of roving-frames so as to produce the desired quality of roving.

References:

1. Manual of Cotton Spinning Vol. 3–Text. Institute.
2. Klein; The Textile Institute – Short Staple Spinning Series.
3. Taggart; Cotton Spinning Calculations.
4. Venkatasubramani; Spun Yarn Tech. Vol. 3.
5. Khare AR; Elements of Carding & Drawing.
6. Khare AR; Elements of Combing.
7. Cotton Combing – Gilbert Merrill
8. Cotton Drawing and Roving – Gilbert Merrill
9. Drawing, Combing and Roving – Z.S. Szaloki
10. Electronics Controls for Textile Machines – Hiren Joshi, Gouri Joshi, NCUTE Pub.2002
11. Cotton Spinning – Taggart

List of Experiments (Pl. expand it):

1. An elaborate study of Drawframe, Comber and Speed frame, constructional details, setting and gauging, controls and change places, Calculations of speeds, drafts, production
2. To study the general features of a draw frame, Draw the drafting arrangement of the draw frame.
3. Draw the gearing diagram of draw frame and calculate break draft, main draft, total draft, draft constants, creel draft.
4. Study the machine, material and man safety devices in draw frame.
5. To study the general features of a speed frame. Draw the drafting arrangement of the speed frame.
6. Draw the gearing diagram of speed frame and calculate break draft, main draft, total draft, draft constants, creel draft.
7. To study the building mechanism of a speed frame.
8. To study the twisting mechanism and to calculate the twist constants and spindle speed based on the gearing diagram.
9. Study the machine, material and man safety devices in speed frame.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, IV-Semester

TEXTILE CHEMISTRY- I

COURSE OBJECTIVE

1. Students will be able to understand use effectively principles and mechanisms of dyeing processes on different textile goods.
2. Students will be able to analyze fastness properties of materials dyed with different dyes

Introduction to Dyeing: Classification of dyes according to chemical constitution and according to application; concept and utility of Color Index
Dyeing Equipments: General working principles of different machines used in dyeing including fiber dyeing machine, package dyeing machine, jigger, winch, jet dyeing machine, soft flow machine
Some mathematical formulas and calculation relating to dyeing

Direct dye: General properties; classification: class A, class B and class C; dyeing mechanism; general method of application; after-treatment of direct dyed material; a few brand names of direct dye
Reactive dye: General properties; classification-Tri-azynil type and vinyl sulphone type reactive dye; dyeing mechanism- Neucleophilic substitution and nucleophilic addition reaction; general method of application; application by batch-wise, semi-continuous and continuous process; a few brand names of reactive dye

Acid dye: General properties; classification- leveling, milling and super-milling acid dye; mechanism of dyeing with acid dye on wool, silk and nylon; general method of application; a few brand names of acid dye
Cationic/basic dye: General properties; dyeing mechanism; method of application on wool and acrylic; brief idea about application on cellulosic materials including necessity of mordanting; a few brand names of basic dye

Vat dye: General properties; classification according to chemical constitution-anthraquinonoid and indigoid vat dye; classification according to application-IK, IW,IN, INS dyeing mechanism, Application method of different types of vat dyes; a few brand names of vat dye; special problems associated with vat dyes.

Sulphur dye: General properties; classification; dyeing mechanism; method of application; a few brand names of sulphur dye

Disperse dye: General properties; classification; dyeing mechanism; oligomers- their chemical nature, troubles and their removal; method of application of disperse dye-carrier method, HTHP method, Thermosol ; a few brand names

COURSE OUTCOMES

Upon completion of the course the student shall be able to

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

References

1. Technology of Textile processing, Vol. II, Chemistry of Dyes and Principles of Dyeing by V.A. Shenai,
2. Technology of Textile processing, Vol. VI, Technology of Dyeing by V.A. Shenai,
3. Dyeing and Chemical Technology of Textile Fibres by E.R. Trotman
4. John Shore; Cellulosic Dyeing.

List of Experiments

1. Study of detailed process flow of textile chemical processing
2. Desizing of grey cotton fabric by enzymatic desizing method
3. Scouring of desized cotton fabric using sodium hydroxide
4. Bleaching of scoured cotton fabric using hydrogen peroxide
5. Bleaching of scoured cotton fabric using sodium hypochlorite
6. Application of direct dye on bleached cotton fabric
7. Application of reactive dye on bleached cotton fabric
8. Application of vat dye on bleached cotton fabric
9. Application of azoic dye on bleached cotton fabric
10. Application of acid dye on silk fabric
11. Application of natural dye (madder) on nylon fabric

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, IV-Semester

STATISTIC AND QUALITY CONTROL IN TEXTILE

COURSE OBJECTIVE:

Collection and presentation of data, Measures of central tendency, Measures of variation, Skewness, Moments and kurtosis, Probability Theory, priori and posteriori probabilities, conditional probabilities Bay's theorem (Simple Problems).

Probability distribution: discrete distribution, binomial and poison distributions .Continuous Normal Distribution, Exponential Distribution, central value theorem, Normal Probability curve, calculation of mean and variance From Normal Curve, Practical usefulness of normal Distribution, sampling distribution, Bivariate Distribution, Correlation and Regression, Analysis of Variance, significance of error R2 (one way classification only).

Elementary theory of testing of hypothesis, Statistical Hypothesis, Null Hypothesis, Errors of first and second kind, Critical Region, level of Significance. Chi-square test of goodness of fit Test of significance based on T, F and Z distribution.

General idea of sampling method, random sample, sampling size, sample size for different distribution, differences between average and variances

Statistical quality control chart, control limits, X, R, P, Pn chart etc., analysis by defects, number of defects (C chart), introduction to TQM and ISO 9000

COURSE OUTCOME:

REFERENCES:

1. Gupta, Kapoor: Fundamental of Mathematical Statistics
2. Booth J.E.: Textile Testing.
3. SITRA : Application of statistics in textile.
4. Grover B. & Hanby D. S.: Textile testing and Quality Control.
5. Grant Eugene; Statistical Quality control; TMH

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, IV-Semester

FABRIC MANUFACTURING- II

COURSE OBJECTIVE:

1. The students will be able to describe the working of Dobby and Jacquard Shedding Mechanisms.
2. The students will be able to describe the working of Positive Take-Up Mechanisms.
3. The students will be able to describe the working of Various Auxiliary Motion.

COURSE CONTENT:

Dobby shedding scope and uses, negative and positive dobbies, working Principles of Keighley, staubli, Cross-border dobbies, modern electronics dobbies; Preparation of pattern lattices and methods for preparation of punch cards in modern dobbies.

Jacquard shedding, coarse pitch and fine pitch jacquard, working principle of single cylinder single lift and double cylinder double lift jacquards , cross-border Jacquard, Vincenzi jacquard and Vardol jacquards, Modern electronic jacquards and different principles in the preparation of pattern cards. Leno and inverted hook jacquards. Various types of harness tie-ups and their uses, pressure and scale harness , casting out of harness, figuring capacity.

Continuous type take up motion, Direct type take–up Motions, Shirley, Sulzer- Ruti take up motions and calculations related to them and estimation of periodicities, modern take-up motions.

Warp protecting motion, loose reed, fast reed and electromagnetic system, warp easing motion.

COURSE OUTCOMES:

Upon completion of the course the student shall be able to

1. Demonstrate the knowledge of Shedding mechanism and can prepare fabric of desired weave design.
2. Demonstrate the knowledge of Take-up mechanism and adjust the desired PPI.
3. Use the knowledge of auxiliary motions and maintain the quality of fabric.

EVALUATION:

Evaluation will be continuous an integral part of class.

REFERENCES:

1. Bannerjee NN Dr; Weaving Vol. II;
2. Aswani K T; Fancy Weaving;
3. Marks & Robinson; Principle of Weaving;
4. NCUTE; Woven Fabric Production II, 1st Ed Dobby, Jacquar; NCUTE Publication (2002)
5. Talukdar MK et al; Weaving – Machines, Mechanisms and Management;

6. Booth JE; Textile Mathematics – Vol.III;
7. Fox; Mechanism of Weaving;
8. BTRA; Loom Shed; BTRA Silver Jubilee Monograph Series;
9. Hasmukharai B; Fabric Forming;
10. Joshi Hiren, Gauri; Electronic Controls for Textile Machines; NCUTE Pub.(2003)
11. Allan Ormerod, Walter S. Sondheln; Weaving – Tech. & Operations;

LIST OF EXPERIMENTS (PL. EXPANDS IT):

1. Weaving Practical; detailed study of dobby, jacquard and different monitoring systems.
2. Dismantle and refit a climax dobby with proper setting and timing.
3. Dobby pegging for a 16 heals design.
4. Dismantle and refit a weft fork mechanism with proper setting and timing.
5. Dismantle and refit fast reed mechanism with proper setting and timing.
6. Dismantle and refit loose reed mechanism with proper setting and timing.
7. Dismantle and refit Ruti-B positive let - off mechanism with proper setting and timing.
8. Dismantle and refit jacquard with proper setting and timing.

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Choice Based Credit System

Textile Engineering, IV-Semester

Computer Programming

Basic Java Features - C++ Vs JAVA, JAVA virtual machine, Constant & Variables, Data Types, Class, Methods, Objects, Strings and Arrays, Type Casting, Operators, Precedence relations, Control Statements, Exception Handling, File and Streams, Visibility, Constructors, Operator and Methods Overloading, Static Members, Inheritance: Polymorphism, Abstract methods and Classes

Java Collective Frame Work - Data Structures: Introduction, Type-Wrapper Classes for Primitive Types, Dynamic Memory Allocation, Linked List, Stack, Queues, Trees, Generics: Introduction, Overloading Generic Methods, Generic Classes, Collections: Interface Collection and Class Collections, Lists, Array List and Iterator, Linked List, Vector. Collections Algorithms: Algorithm sorts, Algorithm shuffle, Algorithms reverse, fill, copy, max and min Algorithm binary Search, Algorithms add All, Stack Class of Package java. Util, Class Priority Queue and Interface Queue, Maps, Properties Class, Un-modifiable Collections.

Advance Java Features - Multithreading: Thread States, Priorities and Thread Scheduling, Life Cycle of a Thread, Thread Synchronization, Creating and Executing Threads, Multithreading with GUI, Monitors and Monitor Locks. Networking: Manipulating URLs, Reading a file on a Web Server, Socket programming, Security and the Network, RMI, Networking, Accessing Databases with JDBC: Relational Database, SQL, MySQL, Oracle

Advance Java Technologies - Servlets: Overview and Architecture, Setting Up the Apache Tomcat Server, Handling HTTP get Requests, Deploying a web Application, Multitier Applications, Using JDBC from a Servlet, Java Server Pages (JSP): Overview, First JSP Example, Implicit Objects, Scripting, Standard Actions, Directives, Multimedia: Applets and Application: Loading, Displaying and Scaling Images, Animating a Series of Images, Loading and playing Audio clips

Advance Web/Internet Programming (Overview): J2ME, J2EE, EJB, XML.

References:

1. Deitel & Deitel, ”JAVA, How to Program”; PHI, Pearson.
2. E. Balaguruswamy, “Programming In Java”; TMH Publications
3. The Complete Reference: Herbert Schildt, TMH
4. Peter Norton, “Peter Norton Guide To Java Programming”, Techmedia.
5. Merlin Hughes, et al; Java Network Programming , Manning Publications/Prentice Hall
6. Cay Horstmann, Big JAVA, Wiely India.

List of Program to be perform (Expandable)

1. Installation of J2SDK
2. Write a program to show Scope of Variables
3. Write a program to show Concept of CLASS in JAVA
4. Write a program to show Type Casting in JAVA
5. Write a program to show How Exception Handling is in JAVA

6. Write a Program to show Inheritance
7. Write a program to show Polymorphism
8. Write a program to show Access Specifiers (Public, Private, Protected) in JAVA
9. Write a program to show use and Advantages of CONTRUCTOR
10. Write a program to show Interfacing between two classes
11. Write a program to Add a Class to a Package
12. Write a program to show Life Cycle of a Thread
13. Write a program to demonstrate AWT.
14. Write a program to Hide a Class
15. Write a Program to show Data Base Connectivity Using JAVA
16. Write a Program to show “HELLO JAVA ” in Explorer using Applet
17. Write a Program to show Connectivity using JDBC
18. Write a program to demonstrate multithreading using Java.
19. Write a program to demonstrate applet life cycle.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, IV-Semester (Mathematics-III)

(Applicable to CE/TX Branches)

COURSE OBJECTIVE- The objective of this course is to fulfill the needs of Engineers to understand the Applications of Fourier Series, Different Transforms, Complex Analysis & Numerical Solution of Algebraic and Transcendental Equations in order to enable young technocrats to acquire Mathematical thinking of Formulating, Analyzing and Solving a wide range of Practical Problems Appearing in Science & Engineering.

Course Contents

Fourier Series: Fourier Series for Continuous & Discontinuous Functions, Expansion of odd and even periodic functions, Half range Fourier series, Complex form of Fourier Series.

Integral Transforms:

Fourier Transform-Complex Fourier Transform, Fourier Sine and Cosine Transforms, Applications of Fourier Transform in Solving the Ordinary Differential Equation.

Laplace Transform- Introduction of Laplace Transform, Laplace Transform of elementary Functions, Properties of Laplace Transform, Change of Scale Property, First and Second Shifting Properties, Laplace Transform of Derivatives and Integrals. Inverse Laplace Transform & its Properties, Convolution theorem, Applications of Laplace Transform in solving the Ordinary Differential Equations

Functions of Complex Variables: Analytic functions, Harmonic Conjugate, Cauchy-Riemann Equations, Line Integral, Cauchy's Theorem, Cauchy's Integral Formula, Singular Points, Poles & Residues, Residue Theorem , Application of Residues theorem for Evaluation of Real Integrals.

Numerical Solution of Algebraic and Transcendental Equations: Method of Bisection, Secant Method, Regula-Falsi Method, Fixed Point iteration Method, Newton-Raphson Method, Graffe's Method, Lin-Bairstow's Method.

COURSE OUTCOMES- The curriculum of the Department is designed to satisfy the diverse needs of students. Coursework is designed to provide students the opportunity to learn key concepts of Fourier Series, Different Transforms, Complex Analysis & Numerical Solution of Algebraic and Transcendental Equations.

EVALUATION- Evaluation will be continuous, an integral part of the class as well as through external assessment.

References:

1. Erwin Kreyszig: Advanced Engineering Mathematics, Wiley India.
2. B.S. Grewal: Higher Engineering Mathematics , Khanna Publication.
3. Engineering Mathematics By Samnta Pal and Bhutia, Oxford Publication
4. Ramana: Advance Engg. Mathematics, TMH New Delhi
5. Numerical Methods for Engineers by Steven C. Chapra, McGraw Hill Education
6. Introductory Methods of Numerical Analysis by S. S. Sastry, PHI Learning Pvt. Ltd.
7. Numerical Methods By Shrimanta Pal, Oxford

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA BHOPAL

Choice Based Credit System

Textile Engineering, IV-Semester

Systems Engineering

COURSE OBJECTIVE

This course in systems engineering examines the principles and process of creating effective systems to meet application demands. The course is organized as a progression through the systems engineering processes of analysis, design, implementation, and deployment with consideration of verification and validation throughout.

COURSE CONTENT

What is System Engineering, Origin, Examples of Systems requiring systems engineering,Systems Engineer Career Development Model, Perspectives of Systems Engineering, Systems Domains, Systems Engineering Fields, SystemEngineering Approaches.

Structure of Complex Systems, System Building Blocks and Interfaces, Hierarchy of Complex Systems, System Building Blocks, The System Environment, Interfaces and Interactions, Complexity in Modern Systems.

Concept Development and Exploration, Originating a New System, Operations Analysis, Functional Analysis, Feasibility, System Operational Requirements, Implementation of Concept Exploration.

Engineering Development, Reducing Program Risks, Requirements Analysis, Functional Analysis and Design, Prototype Development as a Risk Mitigation Technique, Development Testing, Risk Reduction.

Integration and Evaluation, Integrating, Testing, And Evaluating The Total System, Test Planning And Preparation, System Integration, Developmental System Testing, Operational Test And Evaluation, Engineering For Production, Transition From Development To Production, Production Operations.

COURSE OUTCOME

After successful completion of the course, students would be able to Plan and manage the systems engineering process and examine systems from many perspectives (such as software, hardware, product, etc.) Students can distinguish critical functions, diagnose problems, and apply descoping strategies and judge the complexity of production and deployment issues.

EVALUATION

Evaluation will be a continuous and integral process comprising classroom and external assessment.

REFERENCES:

1. Alexander Kossiakoff, William N Sweet, “System Engineering Principles and Practice, Wiley India
2. Blanchard Fabrycky, Systems engineering and analysis, Pearson
3. Dennis M. Buede, William D.Miller, “The Engineering Design of Systems: Models & Methods” Wiley India
4. JeffreyL Whitten, Lonnie D Bentley, “System Analysis and Design Methods”
5. Richard Stevens, Peter Brook,” System Engineering – Coping with complexity, Prentice Hall