

**REGULATIONS AND SYLLABUS**  
**FOR**  
**JUNIOR LEVEL SUPERVISORY (JLS)**  
**CERTIFICATE COURSE**  
**FOR JUTE DIVERSIFIED PRODUCTS**  
**MANUFACTURING AND QUALITY CONTROL**

**UNDER ISDS PROJECT**

**2014**

**Department of Jute and Fibre Technology**  
**Institute of Jute Technology**

**University of Calcutta**  
**35, Ballygunge Circular Road**  
**Kolkata - 700 019, W.B., India**

**Phone : +91-33- 2461-5326**

**+91-33-2461-5444/5477**

**Telefax : +91-33-2461-5632**

**Website: [www.ijtindia.org](http://www.ijtindia.org)**

**[E-mail : ijt@cal2.vsnl.net.in](mailto:ijt@cal2.vsnl.net.in)**

**DEPARTMENT OF JUTE AND FIBRE TECHNOLOGY  
INSTITUTE OF JUTE TECHNOLOGY  
UNIVERSITY OF CALCUTTA  
35, BALLYGUNGE CIRCULAR ROAD  
KOLKATA – 700 019**

**REGULATIONS AND SYLLABUS FOR THREE MONTHS JUNIOR LEVEL SUPERVISORY (JLS)  
COURSE FOR JUTE DIVERSIFIED PRODUCTS MANUFACTURING AND QUALITY CONTROL  
HAVING TOTAL 450 CONTACT HOURS FOR 3 MONTHS JLS COURSE FOR JDP SECTOR.**

1. The Junior Level Supervisor (JLS) Certificate Course for 3 months on “jute diversified products manufacturing and quality control” shall be conducted at the Department of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta. The duration of the course is three months and shall be held once in every academic session.
2. The total number of seats for the said course is ordinarily 30. The candidates sponsored by JDP Units/Jute Mills Jute related organisations will be preferred.
3. The regular classes (5 days per week) and Examination for this JLS Certificate Course on Jute diversified products manufacturing and quality control shall be held at the Department of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta. The examination will be held after completion of the three months course at such a date as decided by course coordinator and HOD/ Project coordinator ISDS Project approved in the meeting of the Departmental committee of Department of Jute and Fibre Technology
4. Institute of Jute Technology, University of Calcutta or by the JLS-Course Coordinating Committee of the Department of Jute and Fibre Technology ,Institute of Jute Technology, University of Calcutta.
4. Any candidate possessing minimum secondary level school certificate (X pass) are eligible for admission to this Certificate Course. Candidate possessing senior level school certificate (XII pass) or Graduation and is actively engaged in this trade for a period of at least one year shall be preferred for admission to this JLS certificate Course.
5. Selection of the candidates will be done through an admission test and / or interview. SC / ST / OBC candidates will be preferred
6. The total marks for the Certificate Course for jute diversified products manufacturing and quality control for which the candidate will be examined shall be 400.
7. There shall be eight papers (Six theoretical papers, each of 50 marks and two practical papers, each of 50 marks) in the said Certificate Course. In the examination each theoretical papers of 50 marks shall be of 1½ hours duration and each practical paper of 50 marks shall be of 3 hours duration. In each practical paper, 30% marks shall be set apart for viva-voce on theoretical and practical lessons and the remaining 70% requiring written answers, drawings, sketches, calculations etc. for the practical work assigned as well as sessional work, assignment as recorded in the laboratory notebook by the candidate at the time of working in the sewing/dyeing/printing/handloom Laboratory, or Workshop.
8. A candidate shall be eligible to sit for the JLS Examination provided he prosecutes regular course of study at the Institute and attends at least 70% of the theoretical and practical classes separately held during the period of three months. It is essential that the practical and theoretical work should be combined in a progressive course of study that will lead the candidates naturally to their Examinations.
9. A candidate for this JLS Certificate Examination on Jute diversified products manufacturing and quality control shall be examined in the subjects as stated here under.

<b>Subject</b>	<b>Marks</b>
<b><u>Theoretical Papers</u></b>	
Paper – 1 (JDP-01) Handloom weaving and woven Design ( Jute diversified products)	50
Paper – 2(JDP-02) Stitching and Diversified jute bag mfg. ( Jute diversified products)	50
Paper – 3 (JDP-03) Dyeing and Jute Handicrafts ( Jute diversified products)	50
Paper – 4 (JDP-04) Printing and print design ( Jute diversified products)	50
Paper – 5 (JDP-05) Soft Skill for Business development	50
Paper – 6 (JDP-06) Quality Cotrol	50
<b>Sub-Total :</b>	<b>300</b>
<b><u>Practical Papers</u></b>	
Paper – 01(JDP-07) Handloom weaving and woven Design Stitching and Diversified jute bag mfg. ( Jute diversified products)	50
Paper – 02 (JDP-08) ) Dyeing and Jute Handicrafts and Printing and print design	50
<b>Sub-Total :</b>	<b>100</b>
<b>GRAND TOTAL :</b>	<b>400</b>

10. In order to pass the said JLS Certificate Examination a candidate shall have to secure 40% marks in each paper separately and also 50% of the total marks in the aggregate.

11. Candidates who pass this JLS Certificate Examination with 65% and above marks in aggregate will be given 'A' Grade and below 65% marks will be given 'B' Grade. Below 50 % marks in the aggregate and below 40 % marks in any paper (Theoretical & Practical) will be considered as failure to pass this examination.

12. A candidate found to have failed in one paper only but have secured at least an aggregate of 50% of the total marks will be allowed to appear at a Supplementary Examination in that Paper or to sit for the subsequent same Certificate Examination in the next session. A candidate who fails in more than one Paper or in one Paper along with shortage in aggregate of 50% marks or shortage only in aggregate of 50% marks will be declared to have failed in the Examination. However, such candidate will be allowed to take re-admission in the same course in the next session to attend all the classes and to appear in the next exam. as usual to pass the same. But a candidate will not get more than three chances to pass the said examination.

13. The candidate who will pass the examination of the JLS Certificate Course for jute diversified products manufacturing and quality control shall be awarded the Mark sheet and a Certificate in the following format:

**DEPARTMENT OF JUTE AND FIBRE TECHNOLOGY  
INSTITUTE OF JUTE TECHNOLOGY  
UNIVERSITY OF CALCUTTA  
35, Ballygunge Circular Road, Kolkata: 700019**

**CERTIFICATE**

*This is to certify that Shri Smt \_\_\_\_\_  
Daughter / Son of \_\_\_\_\_ has passed the  
Junior Level Supervisory (JLS) Certificate Course in Jute Diversified  
Product Manufacturing and Quality Control Under ISDS Project in the  
year \_\_\_\_\_ and obtained \_\_\_\_\_ Grade.*

*Project Coordinator, ISDS Project*

*Head of the Department*

The schedule of papers and distribution of marks in the three months duration junior level Supervisory training courses on jute diversified products is as follows;–

<b>Subject</b>	<b>Weightage</b>
<b><u>Theoretical Papers</u></b>	
Paper - 1 Theoretical paper as detailed in the syllabus	75%
Paper – 2 Practical paper as detailed in the syllabus	25%

**Department of Jute and Fibre Technology, Institute of Jute Technology,  
University of Calcutta**

**Syllabus for Vocational Short Training Courses( Junior level Supervisor) on Jute Diversified Products for Jute Sector to be Conducted by Department of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta, Under Integrated Skill Development Scheme Project (ISDS) Sponsored by Ministry of Textiles, Government of India**

**Module: JLS -5, Jute diversified products manufacturing and quality control**

**Total Contact Hours 150 (One month Training)**

**Theoretical Syllabus**

**Paper 1: Handloom weaving and woven Design (Full Marks: 50)**

Characteristics of a woven fabric: Idea about different types of Fabric used for Diversified Jute Products and the types of yarn in warp and weft yarn used for producing such products. Idea about fancy yarn. Concept of count of yarn, areal density of fabric and related calculations. Calculation of ends and picks for producing a given fabric.

Preparation of Warp and Weft Yarns. Sizing of warp yarns, types of ingredients used for preparing size paste and formulation of size paste. Preparation of loom beam.

Basic concept of handloom and power looms. Idea of shedding, picking beat up, let-off, take-up mechanism involved in handloom and related settings. Different Dobby looms and Types of Jacquard .Operational mechanism of single cylinder single lift jacquard and double lift double cylinder jacquard.

Weave notations, plan view & sectional view of cloth; drafting, lifting and peg plan. Plain weave and its derivatives. Regular and other twill weaves, Twill derivatives, Satin and Sateen weave and derivatives; Diamond & diaper, Ordinary and Brighton Honey Comb; Huck-a-back; Double cloth. Application of coloured yarns in woven fabrics, simple stripe and check designs. Introduction to design analysis, analysis of jute and jute diversified fabric samples. Application of coloured yarns in woven fabrics, simple stripe and check designs.

Method for developing a design for a woven fabric using dobby and jacquard loom. Concept of Preparing Weaving Design on graph paper with Weave notations; plan and sectional view; drafting, lifting and peg plan. Creation of designs on a hobby loom, jacquard loom and dobby loom.

Concept of Computer Aided Design preparation through computers having specific software. Fabric defects during weaving & their remedies. Specification of common textile and jute based decorative fabrics.

Preparation of project report for setting up of one unit of weaving jute diversified products.

**Paper 2: Stitching and Manufacture of Jute Diversified Products (Full Marks: 50)**

Knowledge about different types of jute based fabrics used for producing different jute diversified products (Files, Fancy bags, Big Shoppers and Soft-luggage etc.). Study of Varieties of jute fabrics available in market for making jute diversified products and their analysis and quality checking. Acquaintance with different Jute based handicrafts and Jute diversified products. Various types of other raw materials, trimmings and accessories used in manufacture of different category of Jute diversified products and jute based handicrafts and their quality checking.

Classification of various stitches (Hand stitches and machine stitches). Properties and applications of different types of stitches. Types of seams used for stitching jute fabric based products. Types of yarn used for sewing jute diversified products.

Various types of sewing machines used for producing different types of stitches. Working of Sewing machines used for making Jute Diversified Products. Different working components and parts and their functions for different types of sewing machines commonly used.

Concept about quality dyeing ( with Direct, Basic , reactive and vat dyeing) , pigment printing and softening and other chemical finishing of Cotton and Jute yarns and fabrics for manufacture of jute diversified products.

Elements of design, Principles of design. Introduction to colors. Concept of design development about drawing and designing any Jute Diversified Products. Concept of creation of newer design using computer aided software's and other tools. Different types of traditional and non-traditional surface embellishment effects and their use.

Preparation of project report for setting up of one unit of stitching and manufacturing of different jute diversified products.

**Paper 3: Dyeing and Handicrafts of Jute Diversified Product, Full Marks: 50**

Classification of Textile Fibres. Different natural fibres and their chemical composition and Properties. Type of fibers used for producing diversified jute product.

De-sizing and Scouring of jute yarns, fabrics and jute blended textiles. Hydrogen peroxide bleaching of jute yarns, fabrics and jute blended textiles. Room temperature bleaching of jute based materials.

Different methods of drying: sun drying, hot air chamber drying, Cylinder drying range for wet jute fabrics.

Introductory concept of dyes and pigments. Basic concepts of dye, dye-fiber affinity, dye uptake and dye fixation. Application based classification of dyes. Selection of particular classes of dyes depending dye-fiber affinity and end use requirement.

Understanding regarding the steps of dyeing process, dyeing cycles and basic calculations for dyeing. Methods of dyeing of jute and jute blended yarns and fabrics with direct, acid, basic, reactive, sulphur, vat and natural dyestuff. Understanding color fastness of dyed jute fabrics to different agencies. After treatment of dyed jute products for improving color fastness to wash, light and rubbing. Methods of determination of color fastness to washing, rubbing and exposure to UV-Light /Sunlight.

Principles and working mechanism of different types of fibre, yarn and fabric dyeing machines. Process control and quality control in dyeing.

Manual system of colour matching. Introduction about quantification of colour and measurement of different colour interaction parameters. Introduction of computer aided colour measurements and colour matching system. Measurement of whiteness index, yellowness index and brightness index of jute products.

Important chemical finishing of bleached and dyed jute products. Cost calculations for different methods of dyeing and finishing of jute products.

Manufacturing of different types of jute handicrafts products as per market requirement.

Preparation of project report for setting up of one dyeing and handicrafts unit of jute diversified products.

**Paper 4: Print Design and Printing of Jute Diversified products, Full Marks: 50**

Distinguishing dyeing and printing. Ingredients used in printing paste and their function. Types, classification and chemistry of thickeners and printing auxiliaries. Sources, preparation and important properties of different thickeners. Selection of thickeners for printing with different dyes or pigments.

Different styles of printing: direct style, resist style and discharge style. Discharge and resist styles of printing of jute and other textile fabrics. Special resist techniques of printing: Tie and Dye, Batik, Bandhni etc. Different traditional/ special printing art, styles and techniques of different parts of India. Hand painting and printing on textile fabrics.

Printing of jute fabrics with important dye classes and pigment colours - Recipe, method and process. Printing of jute blended/union fabrics with important dye classes and pigment colours. Printing with natural dyes and natural pigments. Post printing treatments/ steaming for fixation of colours.

Different techniques of printing: block, stencil, roller, screen, rotary screen, transfer and flock printing. Flat bed and rotary screen printing machines and preparation or manufacturing of screens as per design. Process control and quality control measures in printing: faults in printing and their remedies.

Basic elements of design and principles of design and their use in development of newer textile design in general and print design in particular. Introduction to colours and its classifications: Additive and subtractive primaries, warm colours, cool colours and neutral colours. Colour forecasting and its use. Concept of newer design development using different sources of design, inspiration therefrom (with specific theme and mood board) and end-use requirement besides customer's demographic, psychographic, economic and cultural variations. Concept of creation of newer print design using computer aided software and related raster and vector tools. Use of Corel draw, Photoshop and other specialized dedicated textile print design software's available for textile print design development. Colour separation for multiple coloured Print design development and preparation of flatbed printing screen. Different types of traditional and non-traditional surface embellishment by printing effects on textiles. Use of hand painting and traditional art in print design.

Preparation of project report for setting up of one printing unit of jute diversified products

### **Paper – 5: Soft Skill for Business Development (Full Marks – 50)**

**COMMUNICATION SKILLS:** Objectives, Introduction, meaning of communication and its process  
Styles of communication, Communication Networks in an organisation, Active listening, Good Communication Skills for a manager, How to communicate in different situations, How to make a presentation, Clarity and oral presentation, written presentation Steps for making a presentation  
Using communication in building better teams.

**CORPORATE CULTURE:** Objectives, Introduction, Corporate Culture, How to be an effective leader, The Importance of Employees in an Organisation

**THE MANAGEMENT MODEL:** Objectives, Introduction, CRM -The Management Model, Reasons for failure of CRM

**SELLING SKILLS:** Objectives, Introduction, Selling Skills, Understanding features and selling benefits, Identifying buying signals, Understanding and handling objections with ease, closing the sale\

**TIME MANAGEMENT:** Objectives, Introduction ,Time management, Identifying Time stealers, Management of Priorities, Increasing work effectiveness and productivity, Scheduling and Planning, Managing a balanced life style, Feeling more in control of daily activities ,Reducing stress with effective planning

**STRESS MANAGEMENT:** Objectives, Introduction, Stress Management, Managing Yourself, Planning your next steps

## **Paper 6: Quality Control: (Full Marks: 50)**

What is Quality? Concept of Quality. Classification of Textile Fibre. Jute Fibre – Morphology. Definition of Yarn, Count, Twist, Linear Density etc. Unit of length and mass in different yarn counting system. Conversion from one counting system to another. Yarn strength. Yarn irregularities. Quality Control. Statistical Quality Control. Sampling. Idea of central value. Measure of Dispersion. Standard Deviation. CV% & importance of CV%, Fabric Characteristics – Porter, Short, Count of Yarn, Areal density, Fabric width, Crimp etc. Fabric defects. Fabric strength & different fabric strength testers. Seam strength, Bag Characteristics. Work study, Time & Motion Study, Snap Study, Method Study, Fabric Inspection, Speed checking, Efficiency, Packing & Bailing inspection.

### **PRACTICAL**

#### **Paper-1: Handloom weaving and woven Design (Full Marks: 50)**

An assessment on glossary of different fabrics and Fabric analysis (for identification of different popular weaves): Design, drafting plan & lift (peg plan); colour plan; thread count (warp and weft) and fabric weight of different fabrics

Preparation of weavers beam. Preparation of weft yarn.

Practical study of handlooms and power looms. Setting & tuning of handloom for weaving - warping, dressing & beaming, drafting & denting, mending etc.

Practice for running of a hand loom with or without dobby and power loom. Preparation of fabric sample with different design. Weaving of fabric samples by using the following weaves on a small hand loom and hobby loom (plain, basket & warp faced & weft faced rib weave, even and uneven twill, satin and sateen) Extra-weft insertion.

Card cutting for producing a design with the help of single lift single cylinder jacquard or double lift double cylinder jacquard fitted on a handloom and running of the said loom. Practical study of working and running a single cylinder single lift jacquard or double lift double cylinder jacquard.

Weaving pile (using Persian / Turkish knots) & tapestry rugs on a frame loom. Weaving of Jute based upholstery and furnishing fabrics of varying designs and weave effects. Weaving of Jute-cotton union fabrics in plain weaves and in specialty designs.

#### **Paper – 2: Stitching and Manufacture of Jute Diversified Products (Full Marks – 50)**

Practice of drawing and designing newer designs of Different Jute Diversified products on paper. Acquaintance of different types of Jute based fabrics, different Trimmings and accessories used in manufacture of Jute Diversified Products. Knowledge development about their availability and market price etc. by a small market survey.

Practicing of different types of seams and stitches using a different types of sewing machines. Practicing of sewing jute based fabrics using different types of sewing machines for joining different components of jute diversified products.

Preparing /Making Patterns or templates and Marker plans before cutting fabrics for different components / parts of any Jute Diversified Products as per given design. Preparation of Marker Planning before Cutting



fabrics for reduction of fabric wastage. Practicing of Cutting fabric as per dimension of different components of any designed Jute Diversified products.

Stitching of different jute fabric based diversified products like Table mats & runners, coasters, door mats, utilitarian wall hangings, *torans* (door hangings), file folders, dolls & key chains, various types of bags (toilet, shopping, office, school, fancy, bottle carriers, etc), curtains/door screens, soft luggage.

Preparing Samples with different Surface embellishments on stitched products using decorative stitches, appliqué, different traditional art work of different states of India and other part of the world, different embroidery and pigment printing etc..

### **Paper 3: Dyeing and Handicrafts of Jute Diversified Products, Full Marks: 50**

Scouring of jute and jute blended yarns and fabrics

Bleaching of jute and jute blended yarns and fabrics (Normal hydrogen peroxide bleaching, Hutex and modified Huetex method of stabilized bleaching and Room Temperature Bleaching)

Dyeing of jute fabrics with direct, acid and basic dyestuff by exhaust method, Dyeing of jute fabrics with reactive, vat dyestuff by exhaust method, Dyeing of jute fabrics with natural dyestuff by exhaust method. Dyeing of unionized/blended jute fabrics with reactive and other dyestuff by exhaust method. Dyeing of unionized / blended jute fabrics with natural dyestuff by exhaust method

Dyeing of jute fabrics with reactive and vat dyestuff by pad-batch method, dyeing of jute fabrics with natural dyestuff by pad-batch method.

Practical evaluation of colour fastness of dyed jute fabrics to light, wash and rubbing. Practice for measurement different colour interaction parameters and colour differences in computer aided colour measurement and matching instrument for differently dyed jute textiles.

Common chemical Finishing of bleached and dyed jute diversified products

Practical on manufacturing different jute handicrafts products as per market requirement.

Cost calculations for differently dyed and chemically finished jute based textile products and also jute handicrafts products.

### **Paper 4: Print Design & Printing of Jute Diversified Products, Full Marks: 50**

Drawing and design of different motif and art work with basic design elements and their assembly for specific design development. Understanding concept of repeat unit and colour separation for multiple coloured print design. Practice and Use of hand painting and traditional art work in developing newer print designs.

Practical study of creating different types of traditional and non-traditional surface embellishment effect by printing on jute and other textile fabrics.

Practice of developing print design using corel draw, Photoshop and other print design software for computer aided print design development using raster and vector tools available. Practice of manipulating size, colour, positioning, modifying, change or replacement of colours etc in any developed computer aided textile print design for giving a new look and effects for creating newer designs. Colour separation by computer aided tools and preparation of separate tracings for

Separate screens for each colour in multiple colored print design. Practice of Preparation of screens for printing single and multiple colored print design after colour separation. Practice of printing jute and other textile fabrics using slanted wooden printing table and flatbed screens with hand operated squeeze. Demonstration and Practice of running any semi-automatic flatbed screen printing machine.

Practical understanding of the functions of each ingredients of print paste. Preparation of print paste for printing jute and other textile fabrics with particular dye class or pigments. Printing of jute based fabrics with important dye classes (reactive, direct, and acid) and pigment colours in direct style using different methods (block, stencil, and screen) for single and multiple colored designs. Printing jute and other textiles with natural dyes and natural pigments. Printing of jute blended and jute-cotton or other union fabrics with important dye classes and pigment colours. Post printing treatments / steaming of printed textiles for fixation of colours.

Discharge and Resist style of printing of jute and other textiles. Practice of developing different tie and dye effects by various method and techniques. Practice of bandhni, batik and other special resist printing on jute and other textiles. Practice of operating hand painting method.

Field Visit to a Jute diversified product manufacturing unit.