

**Scheme & Syllabus of  
UNDER GRADUATE DEGREE COURSE**

**III Semester  
(Textile Design)**



**Rajasthan Technical University, Kota**

**Effective from session: 2024-25**



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## Scheme & Syllabus

### II Year-III Semester: Textile Design

#### Teaching and Examination Scheme: B. Des

#### II Year – III Semester

THEORY											
Sr. No.	Category	Course		Contact hrs./week				Marks			Credits
		Code	Title	L	T	P	Total Hrs.	IA	ETE	Total	
1	Design	3BOD-01	Yarn Technology-I	3	-	-	3	30	70	100	3
2	Design	3BOD-02	Fabric Technology-I	3	-	-	3	30	70	100	3
3	Design	3BOD-03	Traditional Indian Textiles-I	3	-	-	3	30	70	100	3
4	Design	3BOD-04	Textile Processing-I	2	-	-	2	30	70	100	2
5	Design	3BOD-05	Industrial Sociology	3	-	-	3	30	70	100	3
Sub Total				14	-	-	14	150	350	500	14
PRACTICAL & SESSIONAL											
6	Design	3BOD-06	Yarn Technology Lab-I	-	-	3	3	60	40	100	1.5
7	Design	3BOD-07	Fabric Technology Lab-I	-	-	3	3	60	40	100	1.5
8	Design	3BOD-08	Traditional Indian Textiles Lab-I	-	-	3	3	60	40	100	1.5
9	Design	3BOD-09	Textile Processing Lab-I	-	-	3	3	60	40	100	1.5
10	Design	3BOD-10	Computer Aided Design Lab-I	-	-	3	3	60	40	100	1.5
11	Design	3BOD-11	Industrial Training	-	-	1	1	60	40	100	1
12	Design	FECxx	Foundation course	-	-	-	-	-	-	100	0.5
Sub Total				-	-	16	16	360	240	700	9
TOTAL OF III SEMESTER				14	-	16	30	510	590	1200	23

**L:** Lecture, **T:** Tutorial, **P:** Practical.

**ETE:** End Term Exam, **IA:** Internal Assessment

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Scheme & Syllabus of II Year III sem. Textile Design for students admitted in Session 2023-24 onwards.



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## Scheme & Syllabus

### II Year-III Semester: Textile Design

#### 3BOD-01: Yarn Technology-I

**Credit: 3**  
**3L+0T+0P**

**Maximum Marks: 100 (IA: 30, ETE: 70)**  
**End Term Exam: 3 Hours**

Sr. no.	Topic	No. of Hours
1.	Introduction to yarn spinning system, Ginning, pre-cleaning of cotton. Description and working of roller ginning saw gins, and rotabar ginning, kinds of mixing. Principles of selection of cotton for mixing hand, bin, stack mixing, auto mixer, different cotton varieties advantage and disadvantage of mixing. Blending.	8
2.	Objects of blow room (opening and cleaning). Types of openers, beaters, latest openers and beaters, Lap forming mechanism. Chute feed system, production calculation.	8
3.	Objects of carding, working principle of carding machine, stripping, Specification of different parts of card & card clothing, Coiling mechanism, card setting, neps/hooks formation, Production, draft and efficiency calculation.	8
4.	Objects of drawing, different drafting systems, ideal drafting, and Production monitoring and control, draft and efficiency calculation. Sliver blending on Draw frame. Auto levelers in card and Drawframe. Production, draft and efficiency calculation.	8
5.	Introduction to different yarn numbering (Count) systems Direct, Indirect systems.	5

#### Reference Books:

- A Practical Guide to Spinning (Individual book for each unit) by W. Kiein.
- Spinning of man-made and blends on cotton systems by K. R. Salhotra.
- Manual of cotton spinning by Frank Fharnley.
- Technology of carding by R. Chattopadhyay.



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

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### II Year-III Semester: Textile Design

#### 3BOD-02: Fabric Technology-I

**Credit: 3**  
**3L+0T+0P**

**Maximum Marks: 100 (IA: 30, ETE: 70)**  
**End Term Exam: 3 Hours**

Sr. no.	Topic	No. of Hours
1.	<b>Introduction to fabric Technology:</b> Fabric structure: Brief introduction to fabric viz. woven, knitted and non-woven. Woven fabric structure. Weaving preparatory: Object of various preparatory process. Sequence of machines for long cloth, poplins and printed dress materials, suiting-shirting fabric checks and stripes, Sari-Dhoti etc.	6
2.	<b>Winding:</b> Warp Winding Object, Classification of winding machine. Passage of yarn from Rotoconer & Auto-coner-various mechanisms: tensioners, yarn clearers, traverse mechanism. Concept of knotter and splicers, production calculation, package faults. Weft winding: Object, pirn shape, passage of Hacoba pirn winder- Traverse mechanism, bunch building mechanism, diameter control, thread stop motion,. Features of automatic pirn winder-. Auto doffing mechanism.	8
3.	<b>Warping:</b> Classification of warping m/c, object of each machine Beam warping- passage, thread stop moton, length measuring device. Horizontal Sectional warping machines; passage, traverse mechanism and its calculation. Warping calculation, efficiency and production calculation, beam defect with remedies.	8
4.	<b>Sizing:</b> Sizing : Object, sizing ingredients, size preparation, classification of sizing m/c, working principles and passage of slasher sizing machines-size box and its development, drying mechanism, Calculation on size concentration, dryer capacity and speed of sizing. Factor affecting size take up, Size-recipe for cotton, PV, PC warp, sizing defects and remedies.	8
5.	<b>Looming in:</b> Drawing in: accessories and tools, manual drawing in process, heald and reed calculation, semi-automatic and fully automatic drawing in machines. Beam gaiting process, Warp Tying in: essential requirement, tying in stand, knotters, warp tying in process. Warp welding, QSC.	8



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### II Year-III Semester: Textile Design

#### Reference Books:

- Industrial practices in weaving preparatory by Mukesh Kumar Singh.
- Yarn preparation Vol. I & II R. Sen Gupta.
- Warp sizing by Rame Bottom.
- Yarn calculation by R. Sen Gupta.
- Textile mathematics vol 3 by J E Booth.
- Watson's Textile Design and Colour by Z Grosicki; Universal Publishing Corp., Bombay (India).
- Grammer of Textile Design – Nisbet, .UK 2012, Wiley.



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

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### II Year-III Semester: Textile Design

#### 3BOD-03: Traditional Indian Textiles-I

**Credit: 3**  
**3L+0T+0P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**  
**End Term Exam: 3 Hours**

Sr. no.	Topic	No. of Hours
1.	Status of traditional textiles of India. a) Evolution and socio – economic significance of Khadi & Handlooms. b) Factors affecting diversity of textiles.	4
2.	Traditional textiles and embroideries of India, origin of embroidery, fabrics of different states of India, motifs used, typical colours and fabrics of Banarasi brocade, Chanderi, Kanthas of Bengal, Kausathi of Karnataka, Chikankari of UP, Kashida of Kashmir, Phulkari of Punjab, Applique of Orissa.	10
3.	Dyed textiles (history, process, application and design) Bandhnis of Rajasthan. Gujarat Ikats –Patolas.	10
4.	Painted and printed textiles (with reference to history, application and design) Painted-Kalamkari. Printed-Block printing, batik printing and stencil printing.	8
5.	Traditional costumes of India:- North States- Rajasthan, Kashmir, Punjab. Southern States-Tamilnadu, Kerala, Karnataka, Andhra Pradesh. Eastern State -Assam, West Bengal. Western State- Maharashtra.	6

#### Reference Books:

- Daniel. H, (1974), "Printing", Hawlin Publishers Ltd, London.
- Lyle. D. S, (1976), "Modern Textiles", John Wiley & Sons, London.
- Hall. A. J, (1969), "The standard handbook of textiles", Heywood books, London.
- Chattopadhyay and Kamal Devi (1975): Handicrafts of India, New Delhi, Indian Council of Cultural Relations.
- Traditional Indian Costumes and Textiles by Parul Bhatanagar. Abhishek Publications, New Delhi, 2004.
- Traditional Indian Textiles by J. Gillen & N. Barnard, Thames & Hudson Ltd., London, 2014



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

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### II Year-III Semester: Textile Design

#### 3BOD-04: Textile Processing-I

**Credit: 2**  
**2L+0T+0P**

**Maximum Marks: 100 (IA: 30, ETE: 70)**  
**End Term Exam: 3 Hours**

Sr. no.	Topic	No. of Hours
1.	Role of water & its quality for wet processing, hard water and soft water. Basic concepts of surfactants in textile processing, Natural and added impurities in textiles, Preparatory process sequences for cotton, wool, silk, polyester, nylon, acrylic and blends.	8
2.	Singeing: Gas singeing, Desizing: Hydrolytic and Oxidative systems, Scouring: Solvent, Conventional and Enzymatic systems, Bleaching with Sodium hypochlorite, Hydrogen peroxide, Sodium chlorite. Optical brightening agents (OBA), mechanism and its application on all fibres. Mercerization of cotton, physical and chemical aspects of mercerization, yarn and fabric mercerizing.	8
3.	Preparatory processes for protein fibres, wool: Carbonization, scouring, bleaching. Degumming and bleaching of silk. Preparatory processes for synthetic fibres and blends: Objective of heat setting, types of heat setting, working of stenters. Scouring and bleaching of synthetic fibres and blends. Assessment of desizing, scouring, bleaching and mercerization.	10
4.	Brief introduction to preparatory processing machineries – Batch machines: Pressure Kiers, Jigger, Winch, Semi continuous and continuous machines: J-Box, Padding mangle.	8
5.	General Consideration and classification of textile auxiliaries, Preparation of detergents, comparison between soaps and detergents, Physical principles involved in detergency conditions for efficient detergency.	6

#### Reference Books:

- Dyeing & Chemical technology of Textile fibers by E.R. Trotman.
- Chemical Technology in the Pre-Treatment process of Textile by Dr S. R. Karmakar.
- Technology of Bleaching Vol. IV, by Dr. V.A. Shenai.
- Technology of Bleaching by J.T Marsh.
- Chemistry of Dyes and principles of Dyeing by Dr. V.A. Shenai.
- Technology of Dyeing by Dr. V.A. Shenai.
- A glimpse on the chemical technology and textile fibres by R.R. Chackrawarti.
- Scouring and Bleaching by E.R.
- Textile Preparation and Dyeing by Asim Kumar Roy Choudhury.

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# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## Scheme & Syllabus

### II Year-III Semester: Textile Design

#### 3BOD-05: Industrial Sociology

**Credit: 3**  
**3L+0T+0P**

**Maximum Marks: 100 (IA: 30, ETE: 70)**  
**End Term Exam: 3 Hours**

Sr. no.	Topic	No. of Hours
1.	Industrial Sociology: Nature, Scope and Importance of Industrial Sociology. Social Relations in Industry, Social Organization in Industry- Bureaucracy, Scientific Management and Human Relations.	8
2.	Rise and Development of Industry: Early Industrialism – Types of Productive Systems – The Manorial or Feudal system. The Guild system, The domestic or putting-out system, and the Factory system. Characteristics of the factory system. Causes and Consequences of industrialization. Obstacles to and Limitations of Industrialization	8
3.	Industrialization in India. Industrial Policy Resolutions–1956. Science, Technology and Innovation Policy of India 2020.	7
4.	Contemporary Issues: Grievances and Grievance handling Procedure. Industrial Disputes: causes, Strikes and Lockouts. Preventive Machinery of Industrial Disputes: Schemes of Workers Participation in Management- Works Committee, Collective Bargaining, Bi-partite & Tri-partite Agreement, Code of Discipline, Standing Orders. Labour courts & Industrial Tribunals.	8
5.	Visualizing the future: Models of industrialization- Collectivist, anarchist, free market, environmentalist, etc. Cultural issues, consumer society and sociological concerns.	7

#### Reference Books:

- PREMVIKAR KAPOOR, Sociology & Economics for Engineers, Khanna Publishing House (Edition 2018).
- GISBERT PASCAL, Fundamentals of Industrial sociology, Tata McGraw Hill, New Delhi, 1972.
- SCHNEIDER ENGNO V., Industrial Sociology 2nd Ed., McGraw Hill Publishing Co., New Delhi, 1979.
- MAMORIA C.B. And MAMORIA S., Dynamics of Industrial Relations in India.
- SINHA G.P. and P.R.N. SINHA, Industrial Relations and Labour Legislations, New Delhi, Oxford and IBH Publishing Co., 1977.
- S.C. SHARMA, Industrial Safety and Health Management, Khanna Book Publishing Co. (P) Ltd., Delhi (ISBN: 978-93-86173-188)
- NADKARNI, LAKSHMI, Sociology of Industrial Worker, Rawat, Jaipur, 1998.
- BHOWMICK SHARIT, Industry, Labour and Society, Orient, 2012.
- RICHARD BROWN, JOHN CHILD, AND S R PARKER, The Sociology of Industry 1st Edition, Routledge, 2015.

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**3BOD-06: Yarn Technology Lab-I**

**Credit: 1.5**  
**0L+0T+3P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**

<b>Sr. no.</b>	<b>Topic</b>
1.	To develop yarn samples with hand charkha & electronic charkha.
2.	To study the parts, gearing diagram of electronic charkha.
3.	Industry visit.



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**3BOD-07: Fabric Technology Lab-I**

**Credit: 1.5**  
**0L+0T+3P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**

<b>Sr. no.</b>	<b>Topic</b>
1	Fabric analysis; weave, sett, identification of single and ply yarns and its count, fabric GSM.
2	Supply and delivery package for winding, passage of winding m/c, rotary traverse, thread stop motion, drive and production calculation,
3	Shuttles and pirns, Pirn winder- study of various mechanisms.
4	Warping m/c-passage, beaming mech. warping calculation
5	Manual drawing in process, various types of reed, healds, and drop pins, beam gaiting process
6	Passage of warp and weft on plain power loom, drive to loom.



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**3BOD-08: Traditional Indian Textiles Lab-I**

**Credit: 1.5**  
**0L+0T+3P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**

<b>Sr. no.</b>	<b>Topic</b>
1	Preparation of samples with embroidery dealt in Traditional Indian Textile-I.
2	Prepare a file with different samples of fabrics dealt in Traditional Indian Textile-I.
3	Market Survey

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#### 3BOD-09: Textile Processing Lab-I

**Credit: 1.5**  
**0L+0T+3P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**

Sr. no.	Topic
1	Scouring of cotton.
2	Scouring of polyester, nylon and acrylic.
3	Scouring of blend.
4	Scouring of wool.
5	Degumming of silk.
6	Bleaching of cotton with NaOCl.
7	Bleaching of cotton with H <sub>2</sub> O <sub>2</sub>
8	Bleaching of cotton with NaClO <sub>2</sub> .
9	Bleaching of polyester, Nylon and Acrylic.
10	Bleaching of blend.
11	Bleaching of wool and silk.
12	Mercerization of cotton
13	Optical whitening agent treatment on Textile materials.



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

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#### 3BOD-10: Computer Aided Design Lab-1

**Credit: 1.5**  
**0L+0T+3P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**

Sr. no.	Topic
1	Corel draw, Exploring the CorelDraw Screen, Inserting and Deleting Pages, Changing Page, Customizing Options, Using Multiple Workspaces, Creation and manipulation, Drawing and Shaping Tools, Using the Freehand Tool, Drawing Lines and Polylines, Working With Special Effects And Texts, Drawing With the Artistic Media Tool, Shaping an Object with an Envelope, Extruding an Object, Blending Two Objects, Using the Lens Effect, Adding Perspectives, Using Power Clips.
2	Drawing & shaping objects, Organizing objects, Arranging objects, Changing the order of objects, Grouping and ungrouping objects, Locking & Unlocking objects, Using layers to organize your drawings, Transforming objects, Positioning & moving objects, Sizing & stretching objects, Skewing objects, Welding, trimming & intersecting objects, Working with text, Working with styles & templates, Undoing & redoing changes.
3	Finding & outlining objects, Splitting & erasing portions of objects, Positioning objects with precision, Scaling objects, Working with color, reating special effects, Blending Objects, Distorting objects, Working with envelopes, Extruding objects
4	Working with envelopes, Working with transparencies, Contouring Objects, Using lenses, Adding perspective to objects, Working bitmaps, Printing, Previewing, sizing & positioning a print job, Fine-tuning a print job, Commercial Printing, Creating color separations, Customizing Corel application

#### Reference Books:

- "The Official Guide" by Gary David Bouton.
- "CorelDRAW X8: The Ultimate Beginner's Guide" by Mark Clarkson.
- "CorelDRAW X8 for Dummies" by Roger Wambolt.
- "CorelDRAW Graphics Suite X8 Training Guide" by Graphics Unleashed.



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**3BOD-11: Industrial Training**

**Credit: 0.5**  
**0L+0T+1P**

**Maximum Marks: 100 (IA: 60, ETE: 40)**

<b>Sr. no.</b>	<b>Topic</b>
1.	Practical Training of 15 days in Relevant Industry.