

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
Course Curriculum

WEAVING TECHNOLOGY- II

(Code: 3332903)

Diploma Programme in which this courses offered	Semester in which offered
Textile Manufacturing Technology	3rd Semester

1. RATIONALE

To produce better quality of fabric, yarn preparation is most important process, which requires greatest care and attention. Warping and sizing processes are very crucial processes for fabric formation and quality of the fabric. To achieve higher productivity and improved fabric quality, it is desired to prepare yarn sheet with modern technology. To produce fancy designs, better control on warp and operational knowledge of different doobby mechanism is required. This course imparts knowledge of basic and modern technology of warping process, sizing process and doobby mechanism.

2. COMPETENCY (Programme Outcome according to NBA Terminology):

The course content should be taught and implemented with the aim to achieve different types of skills leading to the achievement of the following competency.

- **Set the process parameters of weaving preparatory and doobby to assure the quality and productivity**

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			C	ESE	PA	ESE	PA	
3	0	4	7	70	30	40	60	200

Legends: L-Lecture; T – Tutorial/Teacher Guided Student Activity; P -Practical; C – Credit;; ESE -End Semester Examination; PA - Progressive Assessment.

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes (Course Outcomes in Cognitive Domain according to NBA terminology)	Topics and Sub-topics
Unit – I Yarn Preparation- -Warping	1a. State the objectives of warping. 1b. List different type of warping m/c and creels 1c. State different type of warping process.(direct and sectional warping). 1d. Identify the defects in warping beams, causes and remedies 1e. Calculate Production of warping,	1.1 Objects of warping. 1.2 Classification of Beam warping machine. 1.3 Super speed Beam warping. 1.4 Type of creel (V creel, H creel, parallel creel, Magazine creel etc.) 1.5 Thread stop motion and beam drive. 1.6 Objects of Sectional warping 1.7 Comparison between direct warping and sectional warping 1.8 Features of Modern High Speed sectional Warping machines. 1.9 Defects in warping beams 1.10 Production calculations.
Unit– II Yarn Preparation- -Sizing	2a. Explain need and importance of Sizing. 2b. List size ingredients and their functions 2c. List different types of sizing recipe and their preparation. 2d. List different sizing methods. 2e. Explain importance of different control devices for Sizing machine. 2f. Identify the defects in Size beams, causes and remedies 2g. Discuss importance of drawing-in and denting. 2.h Calculate Production of Sizing	2.1 Objects of Sizing 2.2 Sizing ingredients & their functions 2.3 Preparation of size paste 2.4 Methods / Techniques of sizing. 2.5 Multi cylinder sizing machine 2.6 Types of creel 2.7 Size box (Conventional & Modern) 2.8 Methods of drying 2.9 Foam sizing, high pressure squeezing system. 2.9 Various control devices on Sizing machine - Size level control - Temperature control - Viscosity control - Moisture control 2.10 Sizing of various yarn 2.11 Defects & remedies in Sized beams 2.12 Drawing in Process - Mechanical Drawing in - Fully Automatic Drawing in 2.13 Knotting & Beam Gaiting 2.14 Routine maintenance in Sizing 2.15 Production calculation
Unit–III Dobby	3a. State need of dobbie. 3b. List different types of dobbie 3c. Explain working of each dobbie 3d. List different type of dobbie mounting. 3e. Identify dobbie cloth defects, causes & remedies	3.1 Need & Classification of dobbie 3.2 Comparison of single lift & double lift dobbie system 3.3 Construction & Working of following dobbies. - Climax Dobby - Cross border dobbie. - Cam Dobby - Paper Dobby - Electronically controlled dobbie. 3.4 Dobby cloth defects & its remedies.

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
I.	Yarn Preparation-Warping	10	4	7	5	16
II.	Yarn Preparation-Sizing	20	8	18	10	36
III.	Dobby	12	4	8	6	18
Total		42	16	33	21	70

Legends: R = Remember; U = Explain; A = Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

6. SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of practical skills (**Course Outcomes in psychomotor domain**) so that students are able to acquire the competencies (Programme Outcomes). Following is the list of practical exercises for guidance.

Note: Here only Course Outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of **Programme Outcomes/Course Outcomes in affective domain** as given in a common list at the beginning of curriculum document for this programme. Faculty should refer to that common list and should ensure that students also acquire those Programme Outcomes/Course Outcomes related to affective domain.

S. No.	Unit No.	Practical/Exercise(Course Outcomes in Psychomotor Domain according to NBA Terminology)	Approx Hours Required
1	I	Draw & Demonstrate passage of yarn through beam warping m/c	06
2	I	Draw & Demonstrate passage of yarn through sectional warping m/c	06
3	I	Demonstrate various types of creel in warping machine.	06
4	II	Demonstrate types of Size box used in sizing machine.	06
5	II	Set various Drying parameters used in sizing machine.	08
6	II	Set Various control devices on Sizing machine	08
7	III	Demonstrate working of Climax doobby	04
8	III	Demonstrate working of cross border doobby	04
9	III	Demonstrate working of Cam doobby.	04
10	III	Demonstrate working of Paper doobby & Electronically controlled doobby	06
11	III	Prepare peg lattice for right hand doobby for a given design	04
12	III	Prepare peg lattice for left hand doobby for a given design	04
Total			66

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like: course/topic based seminars, internet based assignments, teacher, guided self learning activities, course/library/internet/lab based mini-projects---etc.

- Collection of process parameters of Warping & Sizing.
- Visit to weaving preparatory unit, and preparing report with sketches.
- Visit to weaving unit, and preparing report with sketches.
- Literature survey of preparatory machines.

8. SPECIAL INSTRUCTIONAL STRATEGIES (If Any)

- i. Arrange visit to nearby weaving preparatory/weaving unit.
- ii. Show educational videos/animations to explain the weaving process and functioning of preparatory and other machines.
- iii. Give internet based assignments/mini projects on different aspects of weaving process

9. SUGGESTED LEARNING RESOURCES

A. List of Books

S.No.	Title of Books	Author	Publication
1	Yarn preparation Vol I & II	R. Sengupta	Popular Prakashan , Bombay
2	Sizing materials methods machines	D.B. Ajgaonakar, Dr. M.K.Taulkdar, & V.R. Wadekar	Textile Trade Press
3	Weaving machine, material & management	Talukdar, Sriramulu & Ajgaonakar	Mahajan Publishers Private Limited, Ahmedabad
4	Woven Fabric Production – I	NCTUE 2002	
5	Woven Fabric Production - II	NCTUE 2002	

B. List of Major Equipment/ Instrument

- i. Textile Laboratory – Warping, Sizing & Dobby loom

C. LIST OF SOFTWARE /LEARNING WEBSITES

Searching engine could be used to locate textile related sites

- i. <http://www.textileassociationindia.org/>
- ii. <http://www.nitma.org/>
- iii. <http://www.sitra.org/>
- iv. www.itamma.org/
- v. <http://www.uttaindia.org/>
- vi. <http://www.texmechwarp.com>
- vii. <http://karlmayer.com>
- viii. <http://en.wikipedia.org/wiki/weaving>
- ix. <http://www.jupitercompex.com>
- x. http://en.wikipedia.org/wiki/Dobby_loom
- xi. www.staubli.com

xii. www.textileworld.com

10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. V. N. Soni**, HOD Textile Manufacturing , R.C T I, Ahmedabad
- **Prof. R. T. Patel**, Lecturer in Textile Manufacturing, R.C T I, Ahmedabad
- **Prof. (Ms.) S.S.Parmar**, Lecturer in Textile Manufacturing, R.C T I, Ahmedabad
- **Prof. S. M. Zala**, Lecturer in Textile Manufacturing, Shri B.P.T.I, Bhavanagar,

Coordinator and Faculty Member from NITTTR Bhopal

- **Dr. C. K. Chugh**, Professor, Department of Mechanical Engineering
- **Prof. S. K. Gupta**, Professor and Coordinator for State of Gujarat