Program Name : Diploma in Dress Designing & Garment Manufacturing

Program Code : DD

Semester : First

Course Title : Fibre Science

Course Code : 24104

1. RATIONALE

One of the key requirements of a merchandisers and designers is knowledge of fabrics. For this, to begin with, a thorough knowledge of natural and man made fibers, processes involved in yarn manufacturing is required.

2. COMPETENCY

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- **Identify yarn formation.**

3. COURSE OUTCOMES (COs)

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

a. Apply the principles of spinning when producing yarn.
b. Relate the yarn formation of man made fibre.
c. Apply the knowledge of yarn twist to check the performance of fabric.
d. Apply the knowledge of Novelty yarn to check the performance of fabric
e. Use the yarn numbering system.
f. Distinguish the different types of yarns based on the sources.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Credit (L+T+P)	Examination Scheme													
				Theory							Practical						
L	T	P		Paper Hrs.	ESE		PA		Total		ESE		PA		Total		
					Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
3	--	--	3	3	70	28	30*	00	100	40	--	--	--	--	100	40	

**:10 marks of theory PA is for micro-project assessment to facilitate attainment of COs and the remaining 10 marks for tests and assignments given by the teacher.*
***Legends:** **L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **ESE** - End Semester Examination; **PA** - Progressive Assessment*

5. COURSE MAP (with sample COs, Learning Outcomes i.e. LOs and topics)

This course map illustrates an overview of the flow and linkages of the topics at various levels of outcomes (details in subsequent sections) to be attained by the student by the end of the course, in all domains of learning in terms of the industry/employer identified competency depicted at the centre of this map.

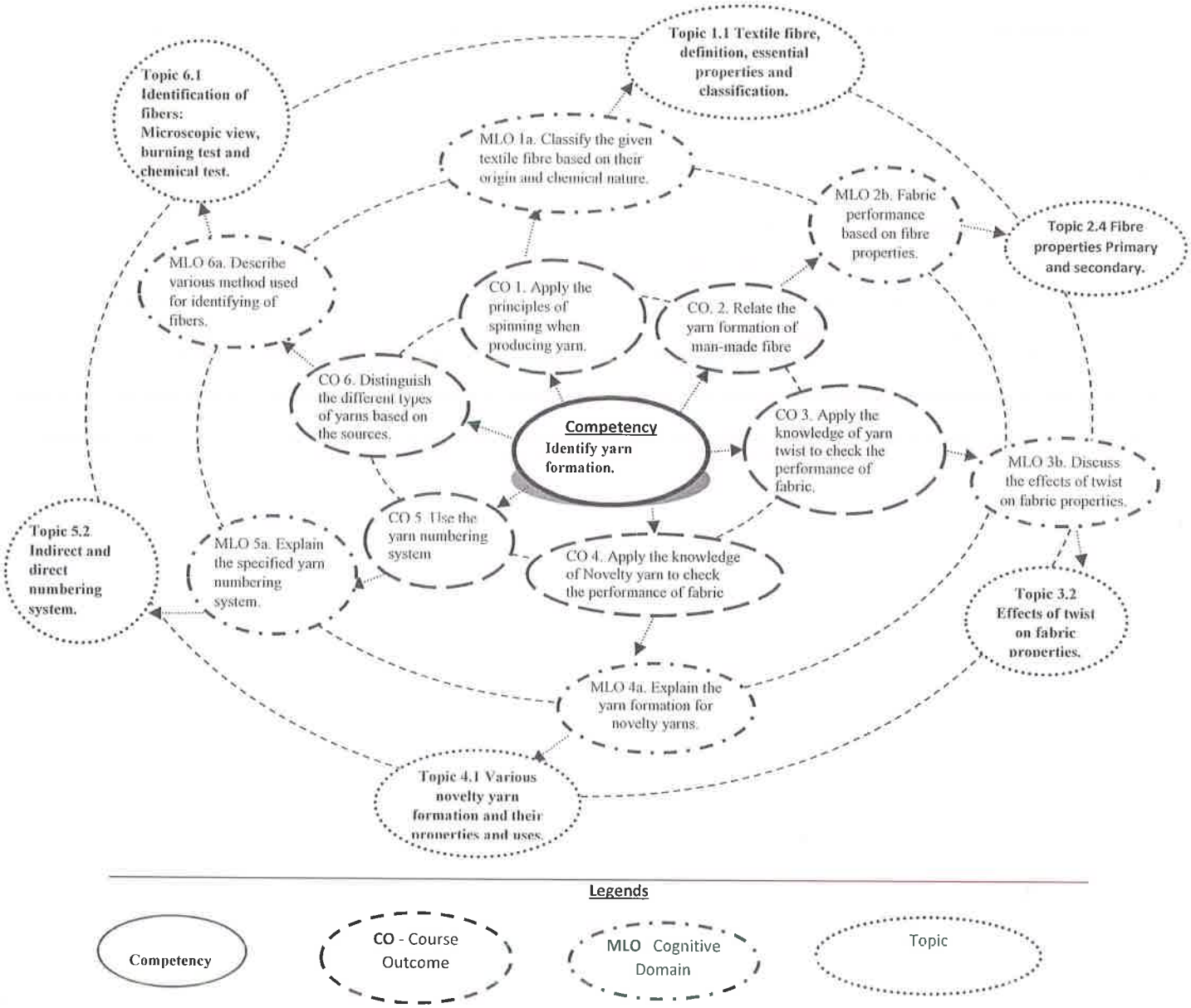

Figure 1 - Course Map

6. UNDERPINNING THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop Los in cognitive domain for achieving the COs to attain the identified competency.

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub – topics
Unit – I Yarn spinning of natural fibre.	1a. Classify the given textile fibre based on their origin and chemical nature. 1b. Explain cultivation processes for given textile fibre. Explain the	1.1 Textile fibre, definition, essential properties and classification. 1.2 Brief study on cotton, silk, wool and bast fibre. 1.3 Introduction to yarn formation of cotton, silk,

	source of these fibres. 1c. Explain step by step process with flow chart for the specified type of yarn. 1d. Explain the purpose of various fabrics based on their fibre properties.	wool and bast fibre. 1.4 Fibre properties Primary & Secondary properties.
Unit – II Yarn formation of man- made fibre.	2a. Explain process through flow chart and step by step information for the specified fibre. 2b. Fabric performance based on fibre properties. 2c & 2d. Same as above.	2.1 Regenerated fibres: viscose rayo, acetate HWM fibres. 2.2 Fibre properties Primary: length, flexibility, strength, uniformity Secondary: Absorbance, hydrophilic and hydrophobic fibres, elasticity, Abstraction, resistance. 2.3 Yarn formation of synthetic fibres: polyester, nylon 2.4 Fibre properties Primary and secondary.
Unit – III Yarn Twist	3a. State the direction of twist and types of twist (low, optimum and high twist) 3b. Discuss the effects of twist on fabric properties.	3.1Different types of twist and its uses: S Twist & Z Twist. Direction & types of twist. 3.2 Effects of twist on fabric properties.
Unit – IV Novelty yarn.	4a. Explain the yarn formation for novelty yarn.	4.1 Various novelty yarn formation and their properties and uses.
Unit – V Yarn numbering system	5a. Explain the specified yarn numbering system.	5.1 Study of yarn numbering. 5.2 Indirect and direct numbering system.
Unit – VI Fiber Identification	6a. Describe various method used for identifying of fibers.	6.1 Identification of fibers: Microscopic view, burning test and chemical test.

7. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Yarn spinning of natural fibre.	12	04	04	06	14
II	Yarn formation of man- made fibre.	12	04	04	06	14
III	Yarn Twist	06	02	02	06	10
IV	Novelty yarn.	06	02	04	06	12
V	Yarn numbering system	06	02	02	06	10
VI	Fiber Identification	06	02	02	06	10
Total		**48**	**16**	**18**	**36**	**70**

Legends: R=Remember, U=Understand, A=Apply and above (Bloom's Revised taxonomy)
Note: This specification table provides general guidelines to assist student for their learning and to teachers to teach and assess with respect to attainment of LOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may vary from above table.

8. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related co-curricular activities which can be undertaken to accelerate the attainment of the various outcomes in this course:

a. Student should maintain a notebook where all the new words which are used in the textile industry can be noted.
b. Students should visit the spinning mills or hand spun unit in any rural area or India.
c. Student will visit a government organization like CIRCOT, Mumbai, Textile Committee, etc.

9. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a. Guide student(s) in understanding the textiles by demonstrating few samples.
b. Use presentation and YouTube videos.

10.SUGGESTED MICRO PROJECTS:

a) Students can go for market survey to local markets and wholescale market in the nearby cities for sourcing of fabrics.
b) Collect different types of ply yarn, cord yarn & novelty yarn and stick them in the journal.
c) Check various fibre under microscope and draw diagrams for fiber identification, similarly do burning and chemical test and note down the readings.

11. SUGGESTED LEARNING RESOURCES:

Sr. No.	Title of Book	Author	Publication
1.	Textiles Fiber To Fabric	Corbman, Bernard	Singapore, Mcgraw-Hill Book Company, 1983
2.	Textile Science	Gohl, E. P. G. Vilensky, L. D.	New Delhi, Cbs Publishers & Distributors Pvt. Ltd., 1983
3.	Textile Fibres And Their Uses	Hess, Katharine Paddock	Calcutta., Oxford & Ibh Publishing Company 1966
4.	Textiles : Origins To Usage	Labarthe, Jules	London, The Macmillan Company / Collier-Macmillan Limited, 1969
5.	Introductory Textile Science	Joseph, Marjory L.	New York, Holt, Rinehart And Winston, 1977
6.	"Technology of Textiles – Spinning and Weaving, Dyeing, Drying, Printing and Bleaching"	Eiri Board	Engineers India Research Institute (January 1, 2009)
7.	Understanding Fabrics A Practical Approach	Akshay Tholia	SARV International A-32, Krishna Nagar – II, Lal Kothi Scheme, Jaipur (India)
8.	Fabric Science	JJ Pizutto	--

12. SUGGESTED SOFTWARE / LEARNING WEBSITES:

a. http://www.madehow.com
b. http://www.wildfibres.co.uk/
c. http://textilelearner.blogspot.com
d. https://www.britannica.com
e. http://textilelearner.blogspot.com
f. http://textilecentre.blogspot.com
g. nonwovens-industry.com
h. textilelearner.blogspot.com
i. ecotextile.com