GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE ENGINEERING (25)

ADVANCED FABRIC MANUFACTURE

SUBJECT CODE: 2722511

SEMESTER: II

Type of course: Elective

Prerequisite: Basic knowledge of weaving and shuttleless looms at BE Level.

Rationale: There has been quite great amount of developments in weaving technology both in preparatory and looms. Industry has moved at a fast rate in modernizing looms. So the recent development in fabric manufacture is very imperative for the overall growth of post graduates.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks		Practical Marks				
				ESE (E)	PA (M)	ESE (V)		PA (I)		
						ESE	OEP	PA	RP	
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Modern Developments in weaving preparatory machines like, winding, warping, sizing and drawing in. Online control systems on the machines. Weft tensioning - Weft unwinding for individual pick. Characteristics of weft supply packages. Weft velocity in shuttleless looms – Rate of weft insertion – Weft control timing circle.	10	25
2	Projectile and rapier looms – recent developments. Some aspects of mechanics of both processes. Applications areas of projectile and rapier looms.	10	25
3	Jet looms. Principles of air jet filling insertion Flow through nozzles, Recent developments in water jet weft insertion. Yarn tension. Dynamics of yarn insertion. Performance of various yarns, effect of yarn structure, count, twist, ply etc.	10	25
4	Developments in unconventional weaving like multiphase etc., electronic dobby and jacquard etc. manufacturing of special fabrics like geotextiles, agrotextiles, sail cloth, for transportation, safety and protective textiles etc.	10	25

Reference Books:

1. Adanur, S. “Handbook of Weaving”, CRC Press, 2001
2. Lord, P.R. & Mohamed M.H. Weaving: Conversion of Yarn to Fabric”, Merrow Technical Library, 1982
3. Goswami B. C., Hall, & Anadijiwala, “Textile Sizing”, The Textile Institute,
4. Marks R. & Robinson A.T.C., “Principles of Weaving”, The Textile Institute, 1976
5. Ormerod, A. & Sondhelm W.S., “Modern Weaving: Technology & Operations”, The Textile Institute, 2004.

6. Journals: Textile Research Journal, Princeton, USA and Journal of Textile Institute, Manchester, UK

Course Outcome:

After learning the course the students should be able to:

1. Understand the important weaving preparatory developments with reference to modern looms.
2. Analyze the effect of production and process parameters on the performance of modern looms.
3. Understand the recent developments in the shuttleless looms.
4. Critically analyze the use of modern looms for producing technical textiles

List of Open Source Software/learning website: http://nptel.iitm.ac.in, World Wide Web, Google Search Engine etc.

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.