



TESTING OF FUNCTIONAL AND TECHNICAL TEXTILES

PROF. APURBA DAS

Department of Textile Engineering
IIT Delhi

PRE-REQUISITES : Basic courses on Textiles

INTENDED AUDIENCE : UG and PG Students of Textile, Clothing and fashion technology, Material science etc.

COURSE OUTLINE :

The course is specially designed for PG students, teachers and professionals. Testing of functional and technical textile materials is an extremely important activity for production, product and process development, research and application. During selection of textile materials for their functional and technical applications the testing of different performance characteristics is necessary. To meet up the customer requirement, specification is very useful. In this concept, testing plays a vital role. In research and development field the evaluation of textile materials helps us to decide the next route. Research Institute, pilot plants can achieve process development through testing or exact investigation into better, cheaper and quicker methods. Certain standard level should be maintained to control the production process. By evaluation of textile materials one can easily detect the faults of machinery and materials. Continuous test of the textiles results an enhanced and efficient output of the production. The course deals with the detailed testing methods and analysis of low stress mechanical and transmission (heat and moisture) characteristics of functional textiles. Also, detail and specific test methods of various technical textile materials, like extreme heat, fire and cold protective clothing, geotextiles, filter fabrics, fibre reinforced composites, electromagnetic shielding textiles, compression bandages, ballistic protective textiles, UV protective textiles, and analysis of test results have been discussed in details.

ABOUT INSTRUCTOR :

Apurba Das is Professor in the Department of Textile Technology, Indian Institute of Technology, Delhi. He has completed his Ph. D. from the same department in the year 1994. He has joined Indian Institute of Technology, Delhi in 2002 as a faculty after serving in the textile industries and in research organization for about 11 years. He has guided many Ph.D., M. Tech., B. Tech. students and presently guiding several Ph.D., M. Tech. and B. Tech. students. He has published more than 260 research papers in journals and conferences, authored and edited 05 books and written chapters in 18 books. He has successfully completed many research and consultancy projects from industries and government funding agencies. He has filed several patent applications. He has developed several instruments for characterization of textile materials. His main areas of teaching and research interest are clothing comfort, sports textiles, nonwovens and technical textiles, filter fabrics, geotextiles, medical bandage, textile composites, and instrumentation. He has international research collaborations with universities from different countries like, Germany, Poland, Hungary, Slovenia, Italy, Portugal, China, South Korea, Australia, UK, Hong Kong, Croatia etc.

COURSE PLAN :

Week 1: Objectives of Testing of Functional and Technical Textiles

Week 2: Testing of Fabric Handle Characteristics Subjective assessment Objective assessment KESF and FAST methods Nozzle extraction principle

Week 3: Testing of Transmission characteristics Moisture transmission (Vapour form and Liquid form) Thermal transmission, Testing of extreme heat, fire and cold protective clothing

Week 4: Testing of extreme heat, fire and cold protective clothing

Week 5: Testing of geotextiles, Testing of filter fabrics

Week 6: Testing of fibre reinforced composites

Week 7: Testing of fibre reinforced composites, Testing of electromagnetic shielding textiles, Testing of compression bandages

Week 8: Testing of ballistic protective textiles, Testing of UV protective textiles, Special Testing for Nonwoven and Technical Textiles