

TEXTILE (TEXT)

TEXT 601: Fiber and Yarn Studies

This course advances the knowledge of fibers and yarns. In the case of cotton and wool, a detailed study of how fibers are produced is made and how the properties and structure of fibers vary in relation to variability in growing conditions is explored. For man-made fibers, the length and fineness can be changed during manufacture depending on the type of system on which the yarn is to be produced. Yarn-processing systems are covered in detail along with faults that can result from various causes, in either the fiber or the machines. Quality-control procedures are emphasized at each stage of processing, along with methods for analyzing test results. Typical products are discussed from the point of view of type of fiber used and type of yarn structure.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lab, Lecture, Lecture/Lab**TEXT 602: Textile Sustainability****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lecture, On-Line**TEXT 603: Adv Integ Engg Product Develop****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lecture, Lecture/Lab**TEXT 613: Characterization Fibrous Mtrls****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 621: Mechanics of Materials****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 622: Mechanics of Textiles****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lecture, Lecture/Lab**TEXT 624: Advanced Textile Composites****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lab, Lecture**TEXT 625: Biomaterials Technology**

General introduction to the uses of artificial materials in the human body for the purposes of healing, correcting deformities and restoring lost function are presented. Topics include biocompatibility, techniques to minimize corrosion, and specific uses of materials in various tissues and organs.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 713: Coloration & Finishing Studies****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lab, Lecture**TEXT 721: Analytical Methods**

Statistical process-control theories and methods are discussed, and applications toward optimizing both process and product quality in modern textile operations are considered. The objective of these studies is to develop a process/product control system for the progressive textile plant of today. Another major segment of this course will be the review and employment of various methods of analysis of experimental data. Various techniques, and their advantages and disadvantages, will be considered and studied using textile applications.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 751: Adv Woven Structures Prod Dev**

Independent pursuit of goals in the development of woven fabrics is emphasized. The student will complete three projects, with product-development skills enhancement as a primary goal. Each project will require a search of current literature, the use of CAD, selection of equipment, production of a prototype fabric and submission of a technical report. Two of the projects will be selected by the course advisor and the third will be student-selected.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 752: Advanced Knitted Structures**

This course is an in-depth study of weft- and warp-knitting technologies, fabric constructions, and apparel, home furnishing and industrial products/applications/markets. Weft-knit fabric technologies studied include single flat and tubular, double knit, fully fashioned, electronic, etc. Warpknit fabric technologies studied include tricot and raschel, weft inserted, double needle bar, multiaxial, etc. Students are exposed to a variety of weft- and warp-knitting machines, stitch constructions and mechanical and electronic design/ pattern mechanisms. Knit fabric geometry is analyzed on the machine, off the machine and after finishing. The relationship and interactions between the knitting yarn and knitting elements are well established. Knitting productivity and quality factors are emphasized.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lecture/Lab, Studio**TEXT 753: Adv Nonwoven Structur Prod Dev**

Nonwovens have a vast range of physical properties and end-use applications with an exceptionally high performance-to-price ratio. Such remarkable characteristics are possible due to the range of fiber type, bonding methods, and finishing methods possible at an exceptionally low cost. This course is intended to give a broad range of knowledge in nonwoven manufacturing methods cost and end-use applications and consumption. This will be accomplished by lecture, laboratory experiments, literature searches, research, cost analysis, statistical comparisons and modeling.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lecture, Lecture/Studio Combination, Studio

TEXT 754: Indstrl,Specialty Fab Prod Dev

Industrial fabrics are used in a variety of applications other than consumer apparel and home furnishing products. For example, industrial fabrics are used in automotive trim, architectural fabric structure, awnings/outdoor furniture, aerostats, camping products, commercial/institutional interior trim and furnishings, composites, conveyor belts, filtration, geotextile and geomembrane applications, hazardous occupational products, marine products, military products, passive solar systems, sails, tarpaulins, tents, tires and window energy systems. This course is concerned with the study of major industrial-fabric applications and constructions. The performance requirements for each major industrial application will be related to the selection of specific fabric constructions. Trends in industrial fibers, yarn structures, fabric constructions, fabric finishing/coating/laminating and in fabrication of industrial products are reviewed for each major application. Each major application/market will be covered, wherein specific requirements and qualified fabric construction will be reviewed. The historical development of each application will be emphasized to demonstrate the impact of new materials/material forms/processing techniques on the dynamic nature of the industrial fabric business.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** On-Line, Studio**TEXT 755: Advanced Yarn Studies****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lab, Lecture**TEXT 759: Product Evaluation**

The processes for the evaluation of fabrics and products are examined. The use of product assessment as a tool for process and product improvement is emphasized. The complexity of the fiber, yarn, fabric and product-forming systems is such that it requires careful evaluation at each stage of the manufacturing process. A comprehensive understanding of the interrelationships of the fabric and product forming stages as related to their evaluation is developed. Established and innovative methods of evaluation are explored.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** By Appointment - 2 students, By Appointment - 3 students, Lab, Lecture, Lecture/Lab**TEXT 762: Tex, Appr Operatns Mgt****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 783: Chem of Fibrous Matrls****Credits:** 3**College:** School of Design & Engineering**Schedule Type:** Lab, Lecture**TEXT 790: Quality Management**

Quality has emerged as a formal management function. No longer restricted to manufacturing and operations areas, it now includes the design, purchasing and marketing processes. Through lecture, discussion and experiential activities, this course examines quality theory and practice ? how a more sophisticated understanding of quality can lead to a strategic approach to utility management which is necessary to compete in today?s world marketplace. Factors required for creating and maintaining a corporation?s strategic and competitive edge are thoroughly analyzed.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Lecture**TEXT 797: Selected Topics**

Selected Topics

Credits: 3**College:** School of Design & Engineering**Schedule Type:** By Appointment - 1 student, Lecture**TEXT 798: Independent Study**

Students may select an independent project or research topic with the approval of the dean of the School of Engineering & Textiles.

Credits: 3**College:** School of Design & Engineering**Schedule Type:** Independent Study