Textile and Apparel Product Safety

TXMI 6900

3 credit hours

Fall 2009

Class Meetings: Mondays, Wednesdays and Fridays, 11:15 to 12:05, Dawson 308

University Honor Code And Academic Honest Policy: "I will be academically honest in all of my academic work and will not tolerate academic dishonesty of other." All academic work must meet the standards contained in *A Culture of Honesty* found at http://www.uga.edu/ovpi. All students are responsible to inform themselves about those standards before performing any academic work.

Professor: Suraj Sharma, PhD
Office: 350 Dawson Hall
Phone: 542-7353
E-mail: ssharma@uga.edu
Office Hours: Mondays, 1:30-3:30; Wednesdays, 1:30-3:30; and by appointment.

Reference Texts / Journals:

1. Product Safety Evaluation Handbook (e-book accessible through GALILEO): edited by Shayne Cox Gad; 1999.
2. Toxic and Biomedical Effects of Fibers; by Paul Gross and Daniel C. Braun; 1984.
3. Modern Textile Characterization Methods; edited by Mastura Raheel; 1996.
4. Duquesne, S., Magniez, C., and Camino, G.; Multifunctional Barriers For Flexible Structure; 2007.
5. *Journals:* Atmospheric Environment; Journal of Hazardous Materials; Environment International; Safety Science; Fire Safety Journal; Materials and Design; Contact Dermatitis; Toxicology Letters; Toxicological Sciences; International Journal of Toxicology; Environmental Science & Technology; Ergonomics; European Academy of Dermatology and Venereology .
6. Standards: ASTM (D13 committee); AATCC; ISO.

Course Description: Assessment of the risk that textile product poses to consumers; Safety and protection from textiles and apparels; Life cycle assessment; and Environmental impact.

Course Objectives: To introduce the student to the consumer safety aspects of the textile and apparels. The lectures are intended to provide a framework for in-class discussion as well as for the student's individual study and analysis of the topics presented. This course will provide an overview of worldwide standards, regulations/acts, and test methods for determining the safety of textiles and apparels. The course will offer hands-on experience with individual textile products through group assignments in order to evaluate their safety for the consumer, using various analytical techniques.

Evaluation

1. Complete successfully mid-term exam 200 points
2. Complete successfully final-term exam 200 points
3. Analysis project (oral and written report) 100 points

Total 500 points

Grading Policy: There are 500 possible points in this course. Final grade assignments will be consistent with the official grading system approved by the Board of Regents.

93-100	(A)	90-92.9	(A-)	88-89.9	(B+)
83-87.9	(B)	80-82.9	(B-)	78-79.9	(C+)
73-77.9	(C)	70-72.9	(C-)	60-69.9	(D)
<60	(F)				

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Course Calendar

1. Introduction (2 hrs)
2. Analytical techniques (10 hrs)
    a. Thermal methods of analysis (TGA, DSC)
    b. Separation science (GC, LC)
    c. Spectroscopic analysis (Infrared, Atomic Absorption, UV , Inductively coupled plasma and Mass spectroscopy)
    d. Microscopic and surface analysis (Optical, Electron, KESF)
3. Safety and protection (12 hrs)
    a. Flammability
    b. Toxicity
    c. Dermatitis
    d. Protective clothing
    e. Air bags/seat belts
4. Restricted substances (2 hrs)
5. Eco-labeling (3 hrs)
6. Environmental impact (2 hrs)
7. Life cycle assessment (3 hrs)
8. Regulation and acts (3 hrs)

9. Nanotoxicology (2 hrs)

Exam Schedule:

Mid-term	Friday, October 9 from 11:15 to 12:05
Final	Thursday, December 10 from 12:00 to 3:00

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"Analysis Project" Guidelines

Each student group will choose or be assigned an "Analysis Project" (AP). The AP will be an exercise in the application of the safety procedures discussed in lecture during the course of the semester to a real world textile/apparel. If the AP is chosen by the student group, the course instructor must approve it.

The final AP will consist of a short (5-7 typed pages plus experimental results) written report due on December 8, 2009 by 1:00 PM. The written report should contain an *introduction* which clearly defines the complete scope of the product safety analysis problem as well as a very short literature review. An *approach section* describing the group's proposed solution to determine the safety of the chosen product in an outline or flow diagram form. The end of this section should include a brief description of the experiments and experimental procedures actually carried out by the group. This section will be followed by a *discussion section* which will demonstrate the validity of group's overall approach. Finally, there should be a brief conclusion section summarizing the group's proposal of determining the safety aspect of the selected product.

The AP grade will be determined on the basis of:

1. The completeness of each section of the written report as noted above.
2. Oral presentation.