

**PH.D. IN INTEGRATED TEXTILE  
AND APPAREL SCIENCE**

**Auburn University**

**Graduate Student Handbook**

**Fall 2007**

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## **1. Introduction**

This handbook presents guidelines and regulations required to obtain a Ph.D. degree in Integrated Textile and Apparel Science (ITAS). This document should be used in conjunction with “Auburn University Graduate Bulletin”. If in doubt about interpretation of rules and policies contained in this manual or the Graduate Bulletin, consult your Advisor, Graduate Program Officer (GPO), or Department Head.

## **2. Program Description**

This program is offered as a joint degree through the Department of Consumer Affairs, College of Human Sciences, and the Department of Polymer and Fiber Engineering, Samuel Ginn College of Engineering.

### **2.1. Course Work**

Students must finish a total of at least 60 semester credit hours with a minimum of **30 semester credit hours** of **graded** graduate course work (6000-level or above) beyond the bachelor’s degree. At least 18 hours of these credit hours must be completed at Auburn University. Of the 30 additional semester hours of course work (at the 6000-level or above) some may be ungraded. A maximum of four semester hours of 7990 (Research and Thesis) for a completed Master’s program can be counted in the 60-hour minimum. Graduate students must maintain a GPA of 3.0 or better to remain in the graduate school.

#### **2.1.1. Ph.D. Core Classes**

Required core classes for a Ph.D. are ITAS7200 (Integrated Textile and Apparel Complex), ITAS8970 (Advanced Topics in Integrated Textile and Apparel Quality Control), ITAS8960 (Current Issues in Integrated Textile and Apparel Science), and ITAS8950 (Industry Issues Seminar). A minimum of 2 semester hours of ITAS8950 or one hour of ITAS 8950 and one hour of CAHS 7950 or PFEN 7950 are required. A minimum of 10 hours of ITAS8990 (Research and Dissertation) are also required.

#### **2.1.2. Tracks**

Ph.D. students will select one of two tracks: Polymer and Fiber Science, or Science of Design (see Appendix). Students will be required to have a minimum of 20-25 semester hours of graduate credit in courses within the selected track or the equivalent of these courses.

Students in the Ph.D. program in ITAS will work with their Graduate Advisory Committee to select additional graduate level CAHS or PFEN courses to meet the requirements of the track chosen and the student’s career objectives. Students with a Master’s level background in their

chosen track may have prior credit in some of these courses; those without either an undergraduate or Master's level background in these subjects will be required to take a larger number of courses in an area of concentration to provide the knowledge base for the Ph.D. in ITAS. Students will take statistics and research methods courses as needed to conduct and evaluate dissertation research and to meet career objectives. Specific courses will be determined by the student's Advisory Committee. Supporting courses outside the Departments of Consumer Affairs and Polymer and Fiber Engineering are encouraged.

## **2.2. Qualifying and General Exams**

Students must pass a General Written Examination after completing the course work to demonstrate understanding of the broad body of knowledge of the field of study. After successful completion of the Written General Examination, students can schedule the Oral General Examination (i.e., generally a dissertation proposal), using the form obtained from the Graduate School. Forms can be downloaded at ([http://www.grad.auburn.edu/site\\_index.html#forms](http://www.grad.auburn.edu/site_index.html#forms)). The Oral General Examination must be scheduled with the Graduate School at least one week in advance of the examination. Upon successful completion of the General Oral Examination (which requires unanimous agreement of the Advisory Committee), the student becomes a candidate for the Doctor of Philosophy degree and may proceed with the dissertation research. If the student fails either the written General Examination or the General Oral Examination, a re-examination may be given on the recommendation of the Advisory Committee and the approval of the Dean of the Graduate School. Candidates have a maximum of four additional years after passing the General Oral Examination in which to complete all additional degree requirements. Students must pass a final oral defense of the dissertation to complete the Ph.D. requirements.

## **2.3. Dissertation**

A dissertation is the written record of an original research project undertaken by a graduate student under the supervision of a graduate faculty committee. The dissertation is composed of a description of the significance of the topic, what is already known relevant to the subject (literature survey of the topic), what the research objectives and/or hypotheses are and how they will be investigated, what was found in conducting the research, i.e., data analysis and interpretation, and how the study contributes to the knowledge base of future research.

The first stage of the dissertation is to choose a research topic, a major advisor and an advisory committee. The next step, after the student becomes familiar with the research area by conducting a thorough literature review, is to present a research proposal to the committee outlining the basic research idea, research plan and research approach methodology. The proposal is typically developed under the supervision of the student's major professor, with input from the committee.

After the major advisor and committee approve the research plan and methodology, i.e., generally through the Oral General Examination, the student is cleared to conduct the research activities under the major advisor's guidance. When the student has achieved a sufficient degree of progress in his/her research work, he/she is requested to present his/her work to colleagues, as well as to other faculty members, in a departmental seminar.

When working on his/her dissertation, the student has to register for ITAS8990. This is the only way that the advisor's work time with the student is documented. While the student is writing the dissertation, after finishing the research and course work, he/she may be allowed to register for GRAD8@@0 to be reported as a full time student.

Dissertations must be prepared according to "The Guide to the Preparation and Submission of Theses and Dissertations" which is available at the University Bookstore and at [www.grad.auburn.edu](http://www.grad.auburn.edu). All dissertations must be microfilmed by University Microfilms International. Students must pay for this service.

After completion of the research work, a draft of the dissertation is presented to the Graduate Advisor for preliminary review. When the Advisor agrees that the dissertation is ready for committee review, the student provides copies to the Advisory Committee 2-3 weeks prior to scheduling a final oral dissertation defense. A copy is also provided to the Graduate School for review by an Outside Reader. The Outside Reader is present at the oral defense of the dissertation. In the oral defense, the student will be asked about his/her research efforts and any other relevant questions. Final passage in this oral exam requires unanimous approval of all committee members and the outside reader. The committee vote is reported on Form 9, Report of Ph.D. Candidate Examining Committee, to be downloaded by the student from the Graduate School website prior to the exam. In case of failure to pass the oral test, the student will be allowed one re-examination contingent on the committee approval and the approval of the Graduate Dean.

### **3. Procedures**

The following outlines some of the procedures required of every graduate student enrolled in the Ph.D. program in Integrated Textile and Apparel Science:

#### ***3.1. Graduate Students Database Form***

Each student should complete a database form when he/she joins the program and submit it to the Polymer and Fiber Engineering and/or Consumer Affairs department secretary.

#### ***3.2. Registration Procedures and Deadlines***

All registration for Auburn University will be via the “tiger i menu” channel that is located on the “tiger i” tab from AU Access. This is accessed in the main AU web page by clicking on “Students” and then clicking on “AU Access”.

Complete registration instructions can be found at [http://www.auburn.edu/administration/registrar/reg\\_instr.pdf](http://www.auburn.edu/administration/registrar/reg_instr.pdf). You will need a username and password to enter the site. This information will be sent to the mailing address listed on your application to the Graduate School. If there are problems with a password, contact the OIT Help Desk at 844-4944.

### **Important Notes**

1. Classes may be dropped until the 15<sup>th</sup> class day for a refund of tuition. (A \$100 drop fee will be charged)
2. Classes may be dropped from the 15<sup>th</sup> day until mid-semester without a refund.
3. It is the student's responsibility to make sure their correct updated name, address, and phone number is always listed on their official university records. This can be done on AU Access.

### **3.3. Plan of Study**

The Plan of Study is filled in on-line at <http://graduate.auburn.edu/gspoststudent/>. This form is used to list the course work to be taken by the student to complete the Ph.D. requirements and lists the Graduate Advisory Committee members. The committee must include at least three graduate faculty members with at least one member from the Department of Polymer and Fiber Engineering and one member from the Department of Consumer Affairs. The advisor/major professor and at least one of the other Graduate Advisory Committee members must be approved by the Graduate School to direct dissertation research. The Graduate School will assign an external reader based on the student advisor's recommendation. The Plan of Study must be approved by the student's advisor, all Graduate Advisory Committee members, and the Department Heads from both departments. The Plan of Study should be filed by the end of the second semester. Failure to submit the form by that time may result in a block on the student schedule for Pre-registration. If unforeseen circumstances arise, Plans of Study can be revised.

### **3.4. Grading Information**

To receive any graduate degree at Auburn University, students must earn a cumulative GPA of 3.0 on all courses carrying graduate credit. Students may not take more than 9 semester hours beyond the Plan of Study to obtain the 3.0 GPA.

Students making grades of D and F must repeat those courses whether or not they are listed on their Plans of Study. Both the original grade and the grade for the repeated course will be counted in calculating the cumulative GPA. Course credits from other universities may not be used to satisfy the requirement to repeat courses. Courses that are retaken will not count as part of the 9-hour limit beyond the Plan of Study used to obtain the cumulative 3.0 GPA. Students who

score a grade of U in a course that is graded as S or U will also have to repeat the course at Auburn and follow the same rules that apply for grades of D and F.

### **3.5. Clearance for Graduation**

In order to get clearance for graduation each student must have taken the following steps:

- 1) have a “Plan of Work” approved by the Graduate School at least one semester prior to graduation
- 2) finished the course work and fulfilled all entries in the “Plan of Work”
- 3) finished the research and dissertation work, and have the dissertation approved by the student’s advisor, committee, and the outside reader
- 4) requested a graduation check from Graduate School, in the semester before the semester of graduation
- 5) notified the Graduate School of the *intention* to graduate, before the beginning of the semester of graduation
- 6) registered in the semester of graduation
- 7) submitted the dissertation draft to the Graduate School for “draft check” within the first two weeks of the graduation semester (optional)
- 8) submitted the final dissertation, along with a signed Form 9 (indicating successful completion of oral final examination) to the Graduate School by the deadline outlined in the University calendar to be found in the Bulletin.

The Graduate School maintains a Guidelines and Checklist for doctoral students at the following web site:

[http://www.grad.auburn.edu/forms/doctoral\\_checklist.pdf](http://www.grad.auburn.edu/forms/doctoral_checklist.pdf). Students should familiarize themselves with these guidelines. The checklist clearly defines the steps which must be followed in order to progress in the program and the forms which must be filed in order to graduate.

## **4. General Information**

The following outlines some of the important information relevant to the program:

### **4.1. Part and Full Time Students**

A student is considered a full time student if he/she is registered for nine or more credit hours per semester. Graduate students may register for a maximum of 16 hours per semester, excluding ITAS 8990 Research and Dissertation. Part time students do have a lighter course load. After all course work and research efforts are completed, if the student still has to maintain a full time load (e.g., international students), he/she can register for GRAD89@@ plus a minimum of one hour of ITAS 8990.

All international students must maintain a full time course load throughout the duration of the program. If the student cannot maintain such status for any reason

(e.g., no courses are given, etc.), the student may obtain a waiver from the International Student Office to be signed by the student's advisor and Department Head.

#### **4.2. *Academic Residency***

Doctoral students must directly engage in research with the major professor, must have access to the research tools needed for the research activity, must be immersed in the culture of graduate education, must engage in the professional activities of the discipline, and must complete the research activity in a reasonable period of time. Graduation requires the major professor to certify compliance with the requirements.

#### **4.3. *Graduate Assistantship/Fellowship***

Graduate assistantships are offered in both departments subject to availability of funds.

All graduate students accepted into the ITAS program are considered as applicants for available assistantships. In case the student is awarded an assistantship, he/she needs to complete the assistantship paperwork in order to receive remission of the out-of-state tuition. Once paperwork showing a one-fourth-time or more assistantship position has passed through all necessary university channels, the Bursar's Office can issue the credit for the out-of-state tuition. Since this takes some time, the initial tuition bill probably will not show the tuition remission. Prior to tuition due date, the student is advised to go to the Bursar's Office (Quad Center) and ask them to check his/her status in the university system (on computer) and adjust the tuition accordingly. Assistantships may be renewed based on satisfactory progress toward meeting degree requirements, satisfactory performance of assistantship responsibilities, and availability of funding.

#### **4.4. *Graduate Fellowship***

Graduate Teaching Fellowships and Graduate Research Fellowships are available to students holding assistantships of one-fourth time or greater. These fellowships provide for remission of the in-state tuition and some fees for a maximum of 80 semester hours in 12 semesters (which does include the semesters and credit hours while enrolled as a master's student at Auburn University). See [www.grad.auburn.edu/gtufs](http://www.grad.auburn.edu/gtufs).

#### **4.5. *Student Activities and Opportunities***

##### **Conference Presentations**

Graduate students are encouraged to submit papers for presentation at conferences such as at the National Textile Center (NTC) Forum, Auburn University Graduate Student Consortium, the Six State Graduate Student Consortium, and other national and international conferences. Information about such conferences will be distributed through department e-mail or department bulletin boards. When

departmental budget resources allow, the department may provide some support for graduate students presenting papers, e.g., by paying the cost of transportation to one or more conferences per budget year.

### **National Textile Center**

Auburn University is a charter member of the National Textile Center (NTC), a university research consortium. The Department of Commerce (DoC) supports fundamental research related to improving the competitiveness of the U.S. textile industrial complex. At the Annual NTC Forum graduate student representatives from the eight NTC universities compete in a Graduate Research Paper Competition. Each Auburn University graduate student holding an NTC funded assistantship for two or more years is required to compete in the annual campus Auburn University Graduate Student NTC Research Paper Competition.

### **Six State Graduate Student Consortium**

Graduate students in the textile and apparel – related graduate programs at Auburn University, University of Georgia, Louisiana State University, Florida State University, University of Kentucky and University of Tennessee, and the University of North Carolina-Greensboro are invited to participate in a Graduate Student Consortium each Spring Semester. The purpose of the consortium is to allow students from participating universities a forum for networking and for the professional presentation of graduate research.

### **AU Graduate Research Forum**

The Graduate Research Forum provides an opportunity for graduate students to present their research while competing for cash prizes.

Auburn graduate students are eligible to participate in either an oral or poster presentation session. To sign up for this event please visit

<http://www.auburn.edu/gsc/forum/files/form.html> and submit your abstract.

Abstracts submitted to other conferences will be accepted

As long as they have not been submitted at a previous Forum. The schedule of events will be posted on the GSC homepage at [www.auburn.edu/gsc](http://www.auburn.edu/gsc) soon after all abstracts have been submitted.

### **Graduate Students Association (GSA)**

Each department at Auburn University is encouraged to have a Graduate Student Committee (GSA). Every year one of the graduate students is nominated to be the chair of the departmental GSA. The departmental chair of GSA will represent all the departmental graduate students at various meetings organized by Auburn University. The departmental GSA may plan a variety of other activities during the year, often including an end of semester party, a graduate student picnic, and a welcome party for new graduate students.

### **Grisham/ Trentham Lecture**

The Department of Consumer Affairs annually invites a nationally recognized authority to share his/her experiences, expertise, and insights from some aspect of

textiles, apparel or interiors with students and faculty. Recent Grisham/Trentham speakers include: Steve McCracken, President of Dupont Textiles and Interiors, 2003; Kay Unger, Fashion Designer, 2004; Marc Gobe', Branding Specialist, 2005; Karen Fisher, Design Manager, 2006; and Billy Reid, Fashion Designer, 2007.

**4.6. Professional Organizations with Graduate Student Memberships**

American Chemical Society (ACS), International Textile and Apparel Association (ITAA), American Collegiate Retail Association (ACRA), Association for Consumer Research (ACR), American Association of Textile Chemists and Colorists (AATCC), Fiber Society, and American Society of Mechanical Engineers (ASME) all have graduate student memberships.

**4.7 Dissertation deadline**

See "Clearance for Graduation" section above.

**4.8. Time Limit for Degree Completion**

Ph.D. candidates have a maximum of four additional years after passing the General Oral Examination in which to complete all additional degree requirements.

## **APPENDIX A: GRADUATE FACULTY IN TEXTILE ENGINEERING (TXEN) AND CONSUMER AFFAIRS (CAHS)**

### **Sabit Adanur, Ph.D. (North Carolina State University) , *PFEN***

Polymer composites and processing, engineered fibrous structures, nanofibers, computer aided design and modeling, testing and analysis, fabric formation and machinery. [adanusa@auburn.edu](mailto:adanusa@auburn.edu). 220 Textile Building; phone: 334-844-5497.

### **Maria Lujan Auad, Ph.D. (National Man de Plata) , *PFEN***

Polymer materials science, polymer nanocomposites, flow behavior of polymers, control of microstructure and nanostructure in materials, polymers for structural and biomedical applications. [auad@auburn.edu](mailto:auad@auburn.edu). 103 Textile Building; phone: 334-844-5459.

### **Roy Broughton, Ph.D. (North Carolina State University), *PFEN***

Chemistry and technology of fibers, statistical analysis of fiber properties; nonwoven processes. [brougrm@auburn.edu](mailto:brougrm@auburn.edu). 105 Textile Building; phone: 334-844-5460.

### **Gisela Buschle-Diller, Ph.D. (University of Stuttgart, Germany), Graduate Program Officer, *PFEN***

Enzyme technology, natural polymers, coloration, nanofibers, surface modification, sustainability issues. [buschgi@auburn.edu](mailto:buschgi@auburn.edu). 221 Textile Building; phone: 334-844-5468.

### **Sang-Eun Byun, Ph.D. (Michigan State University), *CAHS***

Fast fashion strategy; consumer shopping behavior; global retailing/sourcing strategies. [sbyun@auburn.edu](mailto:sbyun@auburn.edu). 372A Spidle Hall, phone 334-844-6457.

### **Veena Chattaraman, Ph.D. (Ohio State University), *CAHS***

Apparel aesthetics; product development; ethnic consumer behavior; social psychological aspects of apparel consumption.  
[vchattaraman@auburn.edu](mailto:vchattaraman@auburn.edu); 308G Spidle Hall; phone 334-844-3258

### **Carol B. Centrallo, Ph.D. (University of Minnesota), *CAHS***

Apparel manufacturing in the economy; labor force readiness.  
[Centrcb@auburn.edu](mailto:Centrcb@auburn.edu). 308C Spidle Hall, phone 334-844-1325.

### **Lenda Jo Connell, Ed.D. (Auburn University), Graduate Program Officer, *CAHS***

Apparel production management; marketing and consumer behavior; product development; body scanning applied to apparel sizing; mass customization.  
[Connellj@auburn.edu](mailto:Connellj@auburn.edu); 262 Spidle Hall; phone 334-844-3789.

### **Sara Jane Eisen, Ph.D. (Texas A & M), *CAHS***

Healthcare Interior Environments: healing effects of art in pediatrics and geriatrics; effects of the environment on psychological well-being of users.  
[seisen@auburn.edu](mailto:seisen@auburn.edu). 164 Spidle Hall, phone 334-844-1334

### **Sandra Forsythe, Ph.D. (University of Tennessee), *CAHS***

- Apparel marketing; consumer behavior; consumer decision making in virtual environments; international consumer markets. [Forsysa@auburn.edu](mailto:Forsysa@auburn.edu). 263 Spidle Hall, phone 334-844-6458.
- Shari Parks-Gates, Ph.D. (IDEC, ASID, NCIDQ 6855, Virginia Tech), CAHS**  
Creative endeavors, drawing as a method of discovery and dissemination, recording of vernacular architecture and interiors for study and exhibit, Creativity and brainstorming, Creativity and groups, Creativity and diversity. [spark-gates@auburn.edu](mailto:spark-gates@auburn.edu) 160 Spidle Hall, Phone 334-844-2215
- Yasser Gowayd, Ph.D. (North Carolina State University), PFEN**  
Design and modeling of ceramic and polymer textile composites; image analysis. [gowayya@auburn.edu](mailto:gowayya@auburn.edu). 221 Textile Building, phone: 334-844-5496.
- Wi-Suk Kwon, Ph.D. (Ohio State University), CAHS**  
Consumer behavior; apparel marketing and merchandising; multichannel retailing.  
[kwonwis@auburn.edu](mailto:kwonwis@auburn.edu) 372C Spidle Hall, phone 334-844-4011
- Yehia El Mogahzy, Ph.D. (Alexandra Univeristy, Egypt), PFEN**  
Statistical analysis of fiber properties; linear and nonlinear programming, quality engineering. [yehiae@eng.auburn.edu](mailto:yehiae@eng.auburn.edu) 207 Textile Building, phone: 334-844-5463.
- Paula Peek, M.F.A. (Auburn University), CAHS**  
Space manipulation through color and texture. Two and three dimensional space as well as the realization of intangible space in visual form. [ppeekpau@auburn.edu](mailto:ppeekpau@auburn.edu) 164 Spidle Hall, phone 334-844-1335
- Ann Beth Presley, Ph.D. (University of Maryland), CAHS**  
Textile and apparel evaluation; costume history; e-commerce in apparel and home furnishings. [Preslab@auburn.edu](mailto:Preslab@auburn.edu). 372B Spidle Hall, phone 334-844-1347.
- Peter Schwartz, Ph.D. (North Carolina State University), PFEN, Department Head**  
Mechanics of fibrous structures, composite materials, flow through porous media. [schwartz@eng.auburn.edu](mailto:schwartz@eng.auburn.edu). 101 Textile Building; phone: 334-844-5452.
- Karla Simmons, Ph.D. (North Carolina State University), CAHS**  
3D body scanning, fit and sizing issues related to body scanning, apparel production management, and product development.  
[simmokp@auburn.edu](mailto:simmokp@auburn.edu) 372E Spidle Hall, phone 334-844-1345.
- Howard Thomas, Ph.D. (Clemson University), PFEN**  
Weaving, sizing, warping and winding, nonwovens fabric formation, bulletproof vests. [hthomas@eng.auburn.edu](mailto:hthomas@eng.auburn.edu), 117 Textile Building, phone: 334-844-5461.
- Pamela Ulrich, Ph.D. (University of Oregon), CAHS**  
Commercial development of textile, apparel, and retail industries; fashion history; product development and consumers. [Ulricpv@auburn.edu](mailto:Ulricpv@auburn.edu). 372E Spidle Hall, phone 334-844-1336.
- Carol L. Warfield, Ph.D. (University of Illinois), Department Head, CAHS**  
World production and distribution of textiles and apparel; textile and apparel industry competitiveness; consumer wear studies. [Warficl@auburn.edu](mailto:Warficl@auburn.edu). 308F Spidle Hall, phone 334-844-1329.

## **APPENDIX B: LIST OF COURSES SUITABLE FOR PHD IN ITAS**

Students in the Ph.D. program in ITAS will work with their Graduate Advisory Committee to select additional graduate level CAHS and PFEN courses to meet the requirements of the field chosen and the student's career objectives. Students with a Master's level background in closely related fields may have prior credit in some of these courses; those without either an undergraduate or master's level background in apparel and polymer/fiber engineering will be required to take a larger number of courses from this list to provide the knowledge base for their Ph.D. in ITAS.

### **CAHS Courses:**

- CAHS 6450. History of Costume (3). Lec.3. Pr., University core history or departmental approval.
- CAHS 6600. World Production and Trade in Textiles and Apparel (3). Lec. 3. Pr., core social sciences or departmental approval.
- CAHS 6650. Textile and Apparel Evaluation (4). Lec. 2, Lab. 6. Pr., CAHS 3600 or dept. approval.
- CAHS 6700. Entrepreneurship in Apparel and Interiors (3). Lec. 3. Pr., departmental approval.
- CAHS 6730. History of Textiles (3). Lec. 3. Pr., Core history or departmental approval.
- CAHS 6750. Apparel Line Development (4). Lec. 2, Studio 6. Pr., departmental approval.
- CAHS 6760. Fashion Analysis and Forecasting (3). Lec. 3., Pr., departmental approval.
- CAHS 6850. Apparel Merchandising and Retail Management (4). Lec. 3, Lab 2. Pr., departmental approval
- CAHS 6860. Advanced Retail Buying (3). Lec. 2, Pr., departmental approval.
- CAHS 7050. Research Methods in Consumer and Textile Sciences (3). Lec. 3. Pr., graduate level statistics.
- CAHS 7100. Environmental Design Theories and Applications (3). Lec. 3. Pr., departmental approval.
- CAHS 7530. Economics of Apparel and Textiles (3). Lec. 3. Pr., undergraduate economics, departmental approval.
- CAHS 7670. Clothing and Behavior (3). Lec 3. Pr., departmental approval.
- CAHS 7690. Consumer Preferences for Fashion Products (3). Lec. 3. Pr., departmental approval.
- CAHS 7900. Independent Study (1-3). Pr., departmental approval. May be repeated for a maximum of six credit hours.
- CAHS 7910. Supervised Teaching in Consumer Affairs (1). Pr., departmental approval.
- CAHS 7920. Graduate Internship (3). Pr., departmental approval.
- CAHS 7930. Advanced Design Projects (1-6). Pr., departmental approval. A. Apparel. B. Interiors. C. Visual Merchandising. D. Textile Design. May be repeated for a maximum of six credit hours.
- CAHS 7940. Study/Travel in Consumer Affairs (1-3). Pr., departmental approval. May be repeated for a maximum of six credit hours.

- CAHS 7950. Seminar (1). Pr., departmental approval. May be repeated for a maximum of three credit hours.
- CAHS 7960. Directed Readings (1-3). Pr., departmental approval. May be repeated for a maximum of six credit hours.
- CAHS 7970. Directed Research in Design (1-6). Pr., departmental approval A. Apparel. B. Interiors. C. Visual Merchandising. D. Textile Design. May be repeated for a maximum of six credit hours.
- CAHS 7980. Graduate Project (1-3). Pr., departmental approval. May be repeated for a maximum of six credit hours.
- CAHS 7990. Research and Thesis (1-10). Pr., departmental approval.
- CAHS 8970 Special Topics (1-3) Pr., departmental approval. May be repeated for a maximum of 9 credit hours.

### **PFEN Courses**

- PFEN 6100. Fabrics for Paper Making (3). Pr., departmental approval.
- PFEN 6200. Advanced Polymer Processing (4). Pr., departmental approval.
- PFEN 6250. Advanced Engineering Fibrous Structures (3). Lec. 3. Pr., PFEN 4250 or departmental approval.
- PFEN 6510. Polymer Chemistry (3). Pr., CHEM 2090, ENGR 2050, and PHYS 2200.
- PFEN 6610. Surface Modification. Lec. 2, Lab. 3. Pr., PFEN 3400 or departmental approval.
- PFEN 7210. Fabric Formation and Properties (4), Lec. 3. Lab. 3. Pr., departmental approval.
- PFEN 7250. Advanced Engineering Fibrous Structures (3). Lec. 3. Pr., PFEN 4250 or departmental approval.
- PFEN 7310. Structure and Properties of Polymers (4). Lec. 3, Lab. 3. Pr., CHEM 2080 or departmental approval.
- PFEN 7410. Coloration (4). Lec. 3, lab. 3, pr., PFEN 3400 or departmental approval.
- PFEN 7500. Mechanics of Reinforced Materials (3). Lec. 3. Pr., PFEN 4500.
- PFEN 7620. Advanced Mechanics of Flexible Structures (3). Lec. 3. Pr., PFEN 3600.
- PFEN 7700. Advanced Methods in Polymer Characterization (4). Pr.: PFEN 6510 or departmental approval.
- PFEN 7910. Polymer Rheology (3). Pr.: departmental approval.
- PFEN 7950. Graduate Seminar (1). Pr., departmental approval.
- PFEN 7960 Directed Readings in Integrated Textiles. (3). Lec. 3.
- PFEN 7970. Special Topics (1-3). May be repeated for a maximum of three credit hours.
- PFEN 7980. Graduate Project (1-3). Pr., graduate standing. May be repeated for a maximum of three credit hours.
- PFEN 7990. Research and Thesis (1-10). Pr., departmental approval
- PFEN 8200. Advanced Textile Structure Design and Development (3). Lec. 3. Pr.: departmental approval.
- PFEN 8200. Advanced Textile Structure Design and Development (3). Lec. 3.

### **REQUIRED SUPPORTING COURSE (OTHER DEPARTMENTS)**

Students must complete Statistics courses as determined by the Graduate Advisory Committee.