

# **Syllabus: FAS 482: Textile Science Capstone**

Course Title: FAS 482: Textile Science Capstone

Semester: Fall 2024

Instructor: Prof. Rachel Green

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Office Hours: Fridays 2:00-4:30 PM OR by appointment

Class Time & Place: Wednesday or Friday 3:00-4:15 PM in SANCA 535

## **Course Description:**

This capstone course focuses on the development and testing of innovative textile materials. Students will research, develop, and test a new or improved textile material, culminating in a presentation at the Innovation Showcase. The course includes the development of a project proposal, material research, fabrication, and a final report.

## **Course Objectives:**

Develop and test innovative textile materials with enhanced properties.

Conduct research on existing textile technologies and materials.

Fabricate and test textile samples in a laboratory setting.

Effectively present the textile material at the Innovation Showcase.

## **Learning Outcomes:**

Gain expertise in textile science and material development.

Develop practical skills in research and material testing.

Improve communication skills through written reports and presentations.

Enhance the ability to manage textile science projects from conception to completion.

## **Group Project and Required Subtasks:**

The group project for this course will involve the development and testing of innovative textile materials. The project will be broken down into the following subtasks:

### **1. \*\*Project Proposal (Week 3):\*\***

- Create a proposal detailing the textile material, intended application, and research objectives.

Include a timeline and assign roles to team members.

### **2. \*\*Material Research and Development (Weeks 4-6):\*\***

- Conduct research on existing textile materials and technologies. Develop a new or improved textile material with enhanced properties, such as durability, breathability, or sustainability.

### **3. \*\*Fabrication and Testing (Weeks 7-10):\*\***

- Fabricate samples of the textile material in a laboratory setting. Conduct tests to evaluate the material's performance, including strength, wear resistance, and environmental impact.

### **4. \*\*Optimization and Analysis (Weeks 11-12):\*\***

- Optimize the textile material based on testing results. Analyze the data and compare the material's performance with industry standards.

### **5. \*\*Final Report and Presentation (Weeks 13-15):\*\***

- Document the entire research and development process, including challenges, solutions, and outcomes in a final report.
- Prepare a presentation for the Innovation Showcase that highlights the key aspects of the textile material.

Groups are expected to collaborate closely, meeting regularly to discuss progress and resolve any

issues. Instructor check-ins will be scheduled to provide guidance and feedback.

**Evaluation:**

Class meetings (5): 20 points

Individual meetings (3): 12 points

Project Proposal: 10 points

Material Research and Development: 15 points

Fabrication and Testing: 18 points

Optimization and Analysis: 10 points

Final Report: 10 points

Presentation: 5 points

Poster: 10 points

Total: 100 points

**Course Policies:**

**Attendance and Participation:** Regular attendance and active participation are crucial for success in this course. Students are expected to attend all scheduled class meetings and individual sessions. If a student is unable to attend a class, they should inform the instructor in advance and arrange to complete any missed work.

**Academic Integrity:** All students must adhere to ASU's academic integrity policy. Any form of academic dishonesty, including plagiarism, will be reported and may result in severe penalties, including a failing grade for the course.

**Accommodations:** Students with disabilities or special needs should contact the ASU Disability Resource Center to arrange appropriate accommodations and notify the instructor as soon as possible.

**Important Dates:**

Class Week 1: Introductions & Project Brainstorming (Aug 26)

Individual Meeting #1: Discuss Ideas and Readings (Sep 4)

Class Week 2: Proposal Presentation & Group Feedback (Sep 18)

Individual Meeting #2: Proposal Feedback & Methods Discussion (Oct 2)

Class Week 3: Revised Proposal Presentation & CERTT Tour (Oct 23)

Individual Meeting #3: Data Analysis & Progress Review (Nov 13)

Class Week 4: Professional Development & Project Discussion (Nov 27)

Innovation Showcase: Final Presentations & Poster Display (Dec 6)