NC STATE | Wilson College of Textiles

Senior Design

This capstone course in the Department of Textile Engineering, Chemistry and Science provides companies the opportunity to work with student teams to innovate in product and / or process development. In working with the student teams, your company will be able to explore materials-property design, develop new directions for existing products, or take your materials / product into a new marketspace. Our students will utilize their expertise in engineering fundamentals, information systems, medical textiles, product development, supply chain management, testing and consumer behavior to solve your current product / process challenge. Through your sponsored project, student teams will learn project management and product design principles that leverage the global textile complex.

Project Expectations and Outcome

The purpose of the course is to deliver a 'real-world' experience that prepares students to solve open-ended problems that they will face upon entering the workforce. The sponsored student team is expected to:

1. Communicate effectively on the project problem, objectives and proposed solutions
2. Work efficiently in teams to deliver high-performing results
3. Assess, select and learn the latest and most appropriate technologies for project success; be able to adapt those technologies as needed
4. Analyze the project and solution from financial, economic, technical, ethical and commercial perspectives
5. Develop ideas with appropriate patent mapping and intellectual property assessment
6. Produce proof-of-principles prototype(s)

Benefits to Industry Sponsors

- Access to new ideas and concepts outside of their companies
- Utilize College of Textiles facilities for product / process development and evaluation
- Build brand awareness among Wilson College of Textiles students and tap into highly qualified talent pool

Available Resources

- The senior design lab is a state-of-the-art 4,000-sq.-ft. education space with individual team workspaces, prototyping space, material library and testing equipment
- Students have access to all of the Wilson College of Textiles facilities, including spinning, weaving, knitting, dyeing and finishing, and physical testing

For more information, contact the senior design directors:

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textiles.ncsu.edu/tecs/senior-design

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Sponsor Requirements

While most sponsors spend an average of one to two hours per week on the project, many find that interaction with students to be the most rewarding aspect. Beyond that minimal time commitment, other expectations include:

• Helping define project scope and metrics for project success
• Holding regular meetings with the team and providing specific project feedback
• Providing technical mentoring and feedback on the team's materials and process deliverables
• Providing specific training on unique tools that are pertinent to the project
• Provide coaching to help the student team reach the best solutions

Keys to Success for a Sponsor

• It is important for the sponsor not to tell the team exactly what to do. This is an open-ended problem.
• Address any issues as they arise. If you encounter team issues or technical project issues, contact the program directors immediately.
• Encourage information sharing. Visit NC State and schedule times for the team to visit your company. Consider introducing the team to your company in mid-October and bringing them back at the end of March to present their hard work.

Project Submission

The project submission period is March 1 to July 1. Prior to submission, two short phone interviews are required with the senior design co-directors. This helps to identify the project scope and determine if the project fits wells with our students' skill sets. Sponsors are notified of by August 20, and projects begin the first day of classes in mid-August.

Selection of Student Teams

Student teams are carefully selected based on their project interest, complementary skill sets and leadership style inventory. Each year, 80 to 95 students participate in the program, forming 20 to 25 teams of three to four students per team.

Project Management

The rigorous senior design capstone program spans both fall and spring semesters. Course directors guide the teams through a design process to develop innovative products / processes that meet the projects' defined criteria and constraints.

Financial Commitment

A required donation of $10,000 is due by the end of September. This contribution supports project expenses as well as strategic growth of the capstone lab space and program.

Intellectual Property and Confidentiality

When a project is funded by a donation, NC State University does not exert IP ownership unless an NC State employee is involved; undergraduate students in this course are not NC State employees. The intellectual property generated from the project is owned by the students unless otherwise agreed upon with the sponsor in the form of a non-disclosure agreement between the two parties at the onset of the project. Existing inventions and technologies are the separate property of the sponsor company or NC State. Sponsored research agreements are also available. Two public presentations by the team are made each year in the fall semester and spring semester. Teams are required to review content with the sponsor before this presentation.

Design Showcase

The culmination of the course is a 'Design Day' poster session generally held in April at NC State.

textiles.ncsu.edu/tecs/senior-design
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