

TEXTILE ENGINEERING & SCIENCE (PHD)

Contacts

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Program Website (<https://www.jefferson.edu/academics/colleges-schools-institutes/kanbar-college-of-design-engineering-commerce/school-of-design-engineering/academic-programs/phd-textile-engineering-sciences.html>)

Program Description

- **STEM designated program**

The PhD program in Textile Engineering & Science emphasizes not only depth in fundamental textile engineering and sciences/mechanical engineering disciplines, but also an interdisciplinary approach to understanding technologies in which textile engineers and scientists can and should take a leading role. It is this combined emphasis on fundamentals, the ability to think and work outside one's area of expertise, and the ability to frame complex problems that best defines this doctoral program. Students will propose a textile engineering and sciences problem of substance and then develop a solution. Students must demonstrate the ability to apply scientific principles to meet engineering needs with due regard to factors such as environmental, financial, and/or societal constraints, and they must do so within a reasonable time constraint. While the program requires 36 credits to complete, it may take longer than 2 years to complete the degree.

Learning Goals/Outcomes

- Demonstrate knowledge of and proficiency in applying research methodology to textile engineering
- Demonstrate knowledge and proficiency in technical aspects of textile engineering
- Analyze and critique established textile and engineering theories and synthesize new theories based on research
- Apply their acquired skills toward the development of a unique research project
- Perform written and oral technical communications at a competent level.

Curriculum: 2 Years, 36 Credits

- Beyond Master's Degree in approved field

Course	Title	Credits
First Year		
Select three graduate engineering or textile courses		9
TES 901	Preliminary Examination Prep	3
TES 902	Thesis I	6
Credits		18
Second Year		
TES 903	Dissertation Research I	9
TES 904	Dissertation Research II	3

Course	Title	Credits
TES 906	Thesis II	6
Credits		18
Total Credits		36

- The required three graduate-level courses may be taken at Thomas Jefferson University or at another university after consultation between the student, the dissertation chair, and the director of the program. Depending on the student's background, additional textile courses may need to be taken to provide the student with an in depth understanding of textiles and textile engineering. In this case the extra courses can be substituted for thesis/dissertation courses. Students should discuss this with their dissertation chair and the program director.
- The student should choose a dissertation chair, and in consultation with the chair, create the doctoral committee within the first semester of study. The committee must include at least two textile engineering faculty and one PhD holder outside the university. The doctoral committee may require additional courses to enhance the student's research. During the first and second semesters the student should focus on writing a literature review in an area of interest, agreed upon by the dissertation chair and the committee.
- Students are required to pass a written preliminary exam focused on fibers and polymers, yarn, and fabrics that is administered at least once a year.
- After passing the written preliminary exam, students must pass a written qualifying exam administered by the doctoral committee. Upon passing, the student will give an oral presentation of the research done to date and a suggestion for the dissertation. The committee will provide the student with feedback to direct the dissertation research. Based on the feedback, the student will draft a proposal for dissertation research, and send it and the completed literature review to the committee, and then present them orally to the committee, who will provide feedback aimed at adjusting the scope of the proposal.
- After completing the necessary research, in consultation with the dissertation chair, the student schedules a dissertation presentation and defense with the committee to complete the program.
- While the program is depicted as two years in length, it can extend beyond that for students who need additional time to complete the program.