Fiber and Polymer Science

Degrees Offered:

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<th>Program Title</th>
<th>Ph.D.</th>
<th>Ed.D.</th>
<th>M.S.</th>
<th>M.A.</th>
<th>Master of</th>
<th>M.Ed.</th>
<th>MFA</th>
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<td>Fiber and Polymer Science</td>
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GRADUATE FACULTY

Director of Graduate Programs:
W. Oxenham, Box 8301, 9195156573, woexenham@ncsu.edu, College of Textiles

Alcoa Professor of Chemical and Biomolecular Engineering: S. A. Khan
Burlington Industries Professorship of Textile Technology: R. L. Barker
Camille Dreyfus Professor Emeritus: H. B. Hopfenberg
Celanese Acetate Professorship in Chemical and Biomolecular Engineering: J. Genzer
CHARLES A CANNON PROFESSOR EMERITUS: S. P. Hersh
Charles A. Cannon Professor: S. K. Batra
Ciba-Geigy Distinguished Professor: H. S. Freeman
Cone Mills Professorship of Textile Chemistry: C. B. Smith
Glaxo Distinguished University Professor of Chemistry: J. S. Lindsey
Howard J. Schaffer Distinguished Professor of Chemistry: B. M. Novak
INVISTA Professor of Fiber and Polymer Chemistry: A. E. Tonelli
Joseph D. Moore Professorship of Textile and Apparel Management and Technology: A. B. Godfrey
Lineberger Chair in Yarn Manufacturing: W. Oxenham
R.J. Reynolds Industries: C. F. Zorowski
William A. Klopman Distinguished Professor: B. Pourdeyhimi


Fiber and Polymer Science is a multidisciplinary program bringing together the disciplines of mathematics, chemistry and physics and the application of engineering principles for the development of independent scholars versed in all aspects of fiber materials science. Thus, fiber and polymer science is concerned with the formation of and the mechanical, physical and chemical properties of polymeric materials, fibers
produced from them, fiber assemblies in one-, two- and three-dimensional forms, and fiber reinforced composites, as well as the utilization thereof.

**Admission Requirements:** Students majoring in the physical sciences, engineering, mathematics, textiles and having a Master's degree will normally qualify for admission. For exceptionally qualified students, the Master's degree requirement may be waived, and the student can be admitted directly into the Ph.D. program.

**Doctoral Degree Requirements:** Credit-hour requirements for the Doctor of Philosophy degree are 72. (Up to 18 hours from an M.S. may be applied against the 72.) Students are admitted to candidacy for the Ph.D. degree after passing a prescribed group of courses, completing a scholarly critique of existing knowledge in the field of specialization, and orally defending a research proposal. They must also have passed an English technical writing course during their college career.

**Student Financial Support:** Financial aid in the form of assistantships and fellowships is normally available for all U.S. full-time students. Financial aid in the form of Graduate Research/Teaching Assistantships may be available to a limited number of international students.

**COURSE OFFERINGS** (Extensive use may be made of graduate course offerings in other colleges on campus when developing the minor field.)

Click on [Graduate Courses](http://www.grad.ncsu.edu/catalog/prg.asp?id=FPS) for current Fiber and Polymer Science course information.

**OTHER GENERAL COURSES**
TC 704 Fiber Formation--Theory and Practice
TC(CH,MSE) 762 Physical Chemistry of High Polymers--Bulk Properties
TC 791 Special Topics in Textile Science
TMS 500 Fiber and Polymer Microscopy
TMS 761 Mechanical and Rheological Properties of Fibrous Material
TMS 762 Physical Properties of Fiber Forming Polymers, Fibers and Fibrous Structures
TMS(MSE) 763 Characterization of Structure of Fiber Forming Polymers

**COURSES IN AREAS OF SPECIALIZATION**

**Polymer Chemistry and Synthesis**
TC 530 The Chemistry of Textile Auxiliaries
TC(MSE) 561 Organic Chemistry of Polymers
TC 720 Chemistry of Dyes and Color
TC 721 Dye Synthesis Laboratory

**Polymer Physics and Physical Chemistry**
TC 704 Fiber Formation--Theory and Practice
TC 705 Theory of Dyeing
TC(CH,MSE) 762 Physical Chemistry of High Polymers--Bulk Properties
TC(CHE) 769 Polymers, Surfactants and Colloidal Materials
TC(CH,MSE) 772 Physical Chemistry of High Polymers--Solution Properties
TC(CHE) 779 Diffusion in Polymers
TC 792 Special Topics in Fiber Science
TMS 500 Fiber and Polymer Microscopy

**Mechanics of Textile Materials and Processes**
FPS(TT) 781 Mechanics of Twisted Structures
FPS(TT) 782 Mechanics of Fabric Structures
TE 565 Textile Composites  
TT 500 Understanding the Textile Complex  
TT 503 Materials, Polymers, and Fibers used in Nonwovens  
TT 504 Introduction to Nonwovens Processes and Products  
TT 505 Advanced Nonwovens Processing  
TT 506 Bonding Principles in Nonwovens  
TT 507 Nonwoven Characterization Methods  
TT 508 Nonwoven Product Development  
TT 520 Yarn Processing Dynamics  
TT(TE,TMS) 521 Filament Yarn Production Processing and Properties  
TT 549 Warp Knit Engineering and Structural Design  
TT 550 Production Mechanics and Properties of Woven Fabrics  
TT 551 Advance Woven Fabric Design & Structure  
TT 552 Formation, Structure and Assembly of Medical Textile Products  
TT 570 Textile Digital Design and Technology  
TT 571 Professional Practices in Textile Design and Technology  
TT 581 Technical Textiles  
TT 591 Special Studies in Textile Technology  
TT(FPS) 720 Yarn Production Properties: Advanced Topics

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