

# Fiber and Polymer Science (PhD)

## Degree Requirements

The Ph.D. degree in Fiber and Polymer Science symbolizes the ability of the recipient to undertake original and scholarly work at the highest levels without supervision. The degree is, therefore, not granted simply upon the completion of a stated amount of course work but rather upon demonstration by the student of a comprehensive knowledge base and high attainment in scholarship. The student demonstrates this ability by passing a series of courses, creating a written critical literature review and original research proposal, defending an oral preliminary examination, writing a dissertation reporting the results of an original investigation, and making a final oral defense of the research before the student's advisory committee and other interested members of the University community.

| Code                                                                                                                           | Title                                                                                     | Hours     |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------|
| <b>Required Courses</b>                                                                                                        |                                                                                           | <b>14</b> |
| FPS 801                                                                                                                        | Seminar <sup>1</sup>                                                                      |           |
| FPS 770                                                                                                                        | Advances in Polymer Science <sup>2</sup>                                                  |           |
| TMS 762                                                                                                                        | Physical Properties Of Fiber Forming Polymers, Fibers and Fibrous Structures <sup>2</sup> |           |
| Select two additional Courses from the following: <sup>2</sup>                                                                 |                                                                                           |           |
| <b>Polymer Science</b>                                                                                                         |                                                                                           |           |
| TC 771                                                                                                                         | Polymer Microstructures, Conformations and Properties                                     |           |
| <b>Fiber Science</b>                                                                                                           |                                                                                           |           |
| TC 704                                                                                                                         | Fiber Formation--Theory and Practice                                                      |           |
| TMS 761                                                                                                                        | Mechanical and Rheological Properties Of Fibrous Material                                 |           |
| TMS 763                                                                                                                        | Characterization Of Structure Of Fiber Forming Polymers                                   |           |
| <b>Coloration and Wet Processing</b>                                                                                           |                                                                                           |           |
| TC 706 & TC 707                                                                                                                | Color Science and Color Laboratory                                                        |           |
| TC/FPS 710                                                                                                                     | Science of Dye Chemistry, Dyeing, Printing and Finishing                                  |           |
| TC 720                                                                                                                         | Chemistry Of Dyes and Color                                                               |           |
| <b>Formation and Properties of Textile Products</b>                                                                            |                                                                                           |           |
| FPS 750                                                                                                                        | Advances in Fabric Formation, Structure, and Properties                                   |           |
| <b>Additional Courses</b>                                                                                                      |                                                                                           | <b>58</b> |
| "Elective Courses" that will be applied to reach 72 credit hours will be determined in conjunction with the academic committee |                                                                                           |           |
| <b>Total Hours</b>                                                                                                             |                                                                                           | <b>72</b> |

<sup>1</sup> All students must take two (2) semesters of FPS 801 Seminar.

<sup>2</sup> Every student must obtain a grade of B or better in each of the four qualifying courses chosen.

## Additional Requirements

- A minimum of 72 credit hours is required of students entering the program with a B.S. degree, or a minimum of 54 credit hours beyond

the M.S. degree is required. (Students, who enter the Ph.D. program directly upon completion of an M.S. at NC State, may be allowed credit for up to 30 hours of their M.S. and thus would require 42 additional credit hours to complete the Ph.D.)

- Most of these credit hours are expected to be research credits (FPS 893 Doctoral Supervised Research or FPS 895 Doctoral Dissertation Research).
- Following successful course completion, the student needs to pass the defense of a research proposal to obtain the candidacy for the Ph.D degree.
- The final examination is an oral exam where the student presents and defends her/his research procedures, results and conclusions. The presentation will be made to an examining committee consisting of the student's advisory committee and is open to interested faculty, staff and students. After the presentation the student will be orally examined by the examining committee. The final oral examination can be scheduled once all coursework requirements have been fulfilled and the committee is satisfied that the dissertation is complete, but not earlier than one semester after admission to candidacy.
- The anticipated time for completion of the Ph.D. program is four years for a student entering from a B.S. degree and three years for entry from an M.S. degree. The minimum time required (in exceptional cases) is two years beyond entry if the student obtained an M.S. degree from NC State.

## Faculty

### Full Professors

Harald Ade

Roger L. Barker

Philip Bradford

Lisa Chapman

Emiel DenHartog

Ahmed El-Shafei

Peter Fedkiw

Jan Genzer

Tushar Ghosh

Warren Jasper

Jeff Joines

Saad A. Khan

Martin King

Traci Lamar

Jerome Lavelle

Karen Leonas

Lucian Lucia

Roger Narayan

Lokendra Pai

Melissa Pasquinelli

Behnam Pourdeyhimi

Abdel-Fattah Seyam

Renzo Shamey

Richard Spontak

Hooman Tafreshi

Kristin Thoney-Barletta

Richard Venditti

Nelson Vinueza

Yingjiao Xu

Xiangwu Zhang

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## Associate Professors

Ericka Ford

Wei Gao

Wendy E. Krause

Shuang Lim

Kavita Mathur

Bryan Ormond

Sonja Salmon

Eunkyoung Shim

Minyoung Suh

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## Assistant Professors

Januka Budhathoki-Uprety

Xiaomeng Fang

Jessica Gluck

Amanda Mills

Md Abdul Quddus

Tom Schroeder

Tova Williams

Rong Yin

Yang Zhang

Mengmeng Zhu