

College of Textiles

GRADUATE STUDENT HANDBOOK

Fiber & Polymer Science Program

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I. PROGRAM INTRODUCTION

The Ph.D. degree 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 preliminary written examinations, 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.

A minimum of 72 credit hours is required of students entering the program with a B.S. degree, and a minimum of 54 credit hours beyond the M.S. degree is required. (Students, who enter the PhD program directly upon completion of an MS at NC State, may be allowed credit for up to 30 hours of their MS and thus would require 42 additional credit hours to complete the PhD). The student generally selects courses, in consultation with his/her advisory committee, so as to prepare for admission to candidacy for the degree and to carry out his/her proposed research. (Students are admitted to candidacy after passing the preliminary comprehensive written and oral examination.)

The Fiber and Polymer Science Program requires successful completion of a specific set of qualifying courses plus a minimum of 2 additional courses. These additional courses (which should be selected with input from the advisory committee) can be part of an "official minor", which will require approval from the minor Director of Graduate Programs, or can be courses chosen to provide a better foundation for the research work.

The anticipated time for completion of the Ph.D. program is four years for B.S. entry and three years for M.S. entry. The minimum time required (in exceptional cases) is two years beyond entry if the student obtained an M.S. degree from NC State.

Students are expected to comply with the University guidelines on course load unless special justification can be made for an exception. Any such exceptions must be sanctioned by the Graduate Program Director and approved by the Dean of the Graduate School in advance. Such exceptions will normally not be allowed to extend beyond one semester.

For a complete summary of procedures governing the Ph.D. degree, see the appropriate section of the Graduate Catalog.
http://www.fis.ncsu.edu/grad_catalog/frt-gp4.htm

II. PROGRAM STRUCTURE

A. Overview

The program will contain “milestones” which must be met by the student and these consist of:

- Successful completion of a specified set of four qualifying courses plus a minimum of two additional graduate courses(selected with advice from chair).
- Satisfactory completion of a written critical review of literature in the area of the student’s proposed research.
- Oral defense of the review of literature and a presentation of a research proposal.
- Preparation of a dissertation of original research.
- Oral defense of the dissertation.

Guidance in the planning of these activities will be given by the student’s chair and committee and will form the basis of the “student plan of work”

.B. Preliminary Examinations

The preliminary written examinations are designed to:

- Evaluate the student’s breadth of knowledge in the underlying disciplinary and applied areas of fiber, polymer and textile science and technology
- Confirm that the student can demonstrate an in depth understanding of his/her chosen area of specialization

These will be achieved through course work, a critical literature review and an oral defense of a research proposal.

B.1 “Qualifying Course” Requirement

Every student must obtain a grade of B or better in each of the four courses chosen from a prescribed list (Appendix 1). The list has four focus areas, which are:

- Fiber Science
- Polymer Science
- Coloration and Wet Processing
- Formation and Properties of Fibrous Assemblies

All students must complete the designated course in Polymer Science and the designated course in Fiber Science. The other two courses can be selected from any other courses on the list, with guidance from their advisor (committee chair). Courses on the prescribed list will be offered on an annual basis and each course will include a component which will assess the analytical and writing skills of the students.

Students entering the program with a Masters degree will be expected to complete the “qualifying course” requirement by the end of the third semester.

B.2 Written Critical Review of Literature

Students who have successfully passed all 4 qualifying courses, will proceed to produce a scholarly, in-depth, critical review of the existing knowledge in the field of specialization, in which the student hopes to base his/her dissertation proposal. The review must be submitted to the student’s committee for grading. If the committee agrees that the review is of an acceptable standard, (ideally it should be of “publishable quality”) the student may then schedule an oral defense of the review, coupled with a presentation of a research proposal.

B.3 Preliminary Oral Examination for Admission to Candidacy

After the committee has agreed that the written critical review is acceptable the student is expected to prepare, present and defend a research proposal. The presentation will be made to an examining committee consisting of the student’s advisory committee. The presentation will also be open to interested faculty, staff and students. Usually the proposal will utilize the literature review as the background on which the research is to be based. The proposal should also include an indication of research methodologies to be used, resources needed, and a projected timeline. After the presentation the student will be orally examined by the examining committee, to test his/her ability to relate factual knowledge to specific circumstances, to use knowledge with accuracy and promptness, and to demonstrate a comprehensive understanding of the field of specialization and related areas. Upon satisfactory completion of the oral examination, which for the student entering the program with a MS, must be completed before the end of their 4th semester, the student is admitted to candidacy for the degree. In the event of a “Conditional Pass”, the terms specified in the conditions must be satisfied before the end of the 5th semester.

C. Final Examination

The final examination will consist of the preparation of a dissertation describing the original research which has been carried out and the defense of the dissertation in an oral examination. 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.

C1. Preparation of Dissertation

Under the advisement of his/her chair and committee, the student will write a dissertation covering the original research they have carried out. The committee decides on the format of the dissertation which can be:

- **Either** "traditional" (consisting of various chapters, such as – Literature Review, Experimental Design and Methodologies, Preliminary Trials,.....Conclusions, etc).
- **Or** a collection of papers which have either been submitted, or are ready for submission to a refereed journal.

The dissertation will follow the guidelines set by Graduate School (<http://www.ncsu.edu/grad/etd/docs/etd-guide.pdf>) and should be distributed to the members of the examining committee at least two weeks before the final oral examination is scheduled.

C2. Final Oral Examination

The final oral examination can be scheduled two weeks after the examining committee has received copies of the dissertation-but not earlier than one semester after admission to candidacy. The oral presentation is open to interested parties, who may ask questions of the candidate, but the final examination is normally conducted in closed session of the candidate and the examining committee. Additional details are provided in the graduate catalog. (<http://www.ncsu.edu/grad/catalog/index.php>)

D. Checklist for Ph.D. students

- _____ Ensure that registration is complete before census day and that course load is within the prescribed limits
- ___ Select dissertation research advisor and notify Office of Academic Programs by the end of the second month on campus.
- ___ Complete committee selection, fill out plan of work (POW), obtain the signatures of committee members, and submit POW to the Director of Graduate Studies for approval along with a signed Patent agreement <http://www.ncsu.edu/grad/faculty-and-staff/docs/forms/patent-agreement.docx>
- ___ The POW must be submitted before the student completes the second semester of the graduate study program.
- ___ Grade Point Average (GPA) must be maintained at 3.00 or higher. Language requirement must have been satisfied and recorded with the Graduate School.
- ___ The written portion of the preliminary examination must be completed prior to scheduling the preliminary oral examination.
- ___ Attend Graduate School Thesis Preparation Workshop during third semester and obtain a copy of the University's Guide for the Preparation of Theses from the Graduate School Office. <http://www.ncsu.edu/grad/etd/docs/etd-guide.pdf>
- ___ Schedule the preliminary oral examination **at least 3 weeks** before the proposed date. <http://www.ncsu.edu/grad/faculty-and-staff/docs/forms/doc-or-exam.pdf>
- ___ The doctoral residence requirements must be met prior to scheduling the final oral examination. <http://www.ncsu.edu/grad/handbook/sections/3.15-registration-and-residence.html>
- ___ At least four calendar months must elapse between the preliminary and final oral examinations.
- ___ Schedule the final oral examination **at least 3 weeks** before the proposed date. <http://www.ncsu.edu/grad/faculty-and-staff/docs/forms/doc-or-exam.pdf>
- ___ Distribute completed dissertation to advisory committee and Graduate School representative at least two weeks before the scheduled examination.
- ___ Meet with Graduate School Thesis Editor and obtain preliminary approval of your thesis.
- ___ One month before departure, send letter of resignation to College Business Office.
- ___ Clean laboratory and office, take care of any fees owed to the University, and turn in your keys. **(The diploma will be held until all keys have been returned.)**
- ___ Clear all responsibilities (lab waste, office and lab keys, desk key, and library) and have separation form signed by appropriate COT personnel.

Changes in degree objectives, committee composition, and Plan of Work should be requested as the need arises. Handling these matters at the time of scheduling examinations will create delays.

E. Submission of Theses and Dissertations

Please refer to <http://www.ncsu.edu/grad/etd/index.php> for instructions and details on preparing and submitting your theses and dissertations.

Deadline to graduate, but not register for the current semester: The student must have passed oral examination “unconditionally”, or passed “conditionally” and have cleared all conditions; and met with the thesis editor by the ***LAST WORKING DAY BEFORE THE FIRST DAY OF CLASS FOR THAT SEMESTER.*** It is not necessary to turn in the final thesis by that date, just to have had the review.

Thesis deadline: The student must have passed the oral examination “unconditionally” or have passed “conditionally” and have cleared all conditions; and have met with the thesis editor by ***FOUR WEEKS BEFORE THE LAST DAY OF CLASS.***

Thesis or dissertation submission is by appointment only. **The student must arrange an appointment with the thesis editor at least one week in advance to submit the thesis to the Graduate School.** The earliest point at which this appointment can be scheduled is after the final oral examination has been officially scheduled in the Graduate School.

The following must be delivered to the Thesis Editor in Research III Building, 1005 Capability Drive before the Thesis Editor can accept the final ETD, (NOTE: TO SAVE AN EXTRA TRIP, THESE ITEMS MAY BE BROUGHT TO THE ORIGINAL DISSERTATION REVIEW):

A photocopy of the signed title page

A photocopy of the abstract (NOTE: for this copy only, must be limited to 350 words, including title and header)

Survey of Earned Doctorate Form

Doctoral Dissertation Agreement Form (one-page tear-out from the booklet "Publishing your Dissertation").

Check or money order payable to NCSU for the appropriate microfilming fee

When all changes have been made, the thesis editor will accept the ETD in the system. (ONCE THE ETD HAS BEEN ACCEPTED THERE CAN BE NO FURTHER CHANGES). An automatic email will be sent to the student and the advisor notifying them that the ETD has been accepted. The URL will be noted on the email.

There will be no paper copies issued by the Graduate School. It is the student's responsibility to determine if anyone requires a paper copy and to provide them. See <http://www.ncsu.edu/grad/etd/index.php> for further details.

IV. **FPS GRADUATE FACULTY MEMBERS**

Please refer to faculty list at <http://www.grad.ncsu.edu/catalog/prg.asp?id=FPS>.

Appendix 1

Qualifying courses for FPS Program

FOUR COURSES MUST BE TAKEN BY THE END OF THE 3RD SEMESTER

All students must take:

Introduction to Polymer Science- FPS 792 (TC /FPS 761)?

AND

Physical Properties of Fiber Forming Polymers, Fibers and Fibrous Structures- TMS 762

Plus two additional courses selected from:

Polymer Science

Physical Chemistry of High Polymers- Bulk Properties (TC/FPS 762)
Polymer Microstructures, Conformations and Properties TC 771
Physical Chemistry of High Polymers-Solution Properties (TC/FPS 772)

Fiber Science

Mechanical and Rheological Properties of Fibrous Material TMS 761
Characterization of Structure of Fiber Forming Polymers TMS 763

Coloration and Wet Processing

Color Science TC 706
Textile Wet Processing FPS 792 (TC/FPS 792)

Formation and Properties of Textile Products

Yarn and Fabric Formation, structure and Properties FPS 792
Characterization of Fibrous Product FPS 792