

Textile Technology (BS): Technical Textiles Concentration

To see more about what you will learn in this program, visit the Learning Outcomes website (<https://apps.oirp.ncsu.edu/pgas/>)!

The B.S. in Textile Technology provides students with basic knowledge of fiber materials, science and technologies of fiber processing, as well as fiber-based product design and development. The curriculum prepares students in product design and development processes, beginning with understanding of application to material selection to appropriate technologies to utilize.

The Textile Technology degree program offers a well rounded versatile degree, which prepares graduates to collaborate effectively with professionals in a global interdisciplinary environment. After introductory exposure to several of the fundamental aspects of fiber science and textile technology, the student can build additional depth in one of the three concentrations of Medical Textiles, Technical Textiles, and Textile Supply Chain Operations or stay in the general degree which allows students the flexibility of designing their own interest or transferring from other programs or community colleges. The Medical Textiles concentration covers design and methods of production of state-of-the-art textile products and devices used in medical applications including sutures for wound closing to cardiac support devices. The Technical Textiles concentration covers design principles, understanding of applications, and technologies relevant to the vast array of technical textiles materials and products used in such areas as transportation, storage, packaging, automobile engineering, geotechnical engineering, and much more. This concentration offers two options: Materials and Nonwovens. The Textile Supply Chain Operations concentration focuses on the design, management, and coordination all the activities required to transform raw materials into finished textile products to retail. Students in this degree program will participate in the TE/TT Capstone Design Program (<https://textiles.ncsu.edu/tecs/student-experience/senior-design/>), where projects are sponsored by industry partners and government agencies. More information about the degrees is available on the [TECS TT](https://textiles.ncsu.edu/tecs/undergraduate/textile-technology/) (<https://textiles.ncsu.edu/tecs/undergraduate/textile-technology/>) website.

Plan Requirements

Code	Title	Hours	Counts towards
Orientation			
T 101	Strategies for Success in the Wilson College of Textiles	1	
Acad Writing Research (p. 2) ¹		4	
MA/ST and Natural Sciences			
MA 141	Calculus I ¹	4	
MA 241	Calculus II	4	
ST 311	Introduction to Statistics	3	
or ST 370	Probability and Statistics for Engineers		

CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory ¹	4
PY 205 & PY 206	Physics for Engineers and Scientists I and Physics for Engineers and Scientists I Laboratory	4
PY 208 & PY 209	Physics for Engineers and Scientists II and Physics for Engineers and Scientists II Laboratory	4
Major Requirements		
EC 205	Fundamentals of Economics	3
FTM 217	The Textile Industry	3
MT 366	Biotextile Product Development	3
PCC 302	Technology of Textile Wet Processing	4
TE 200	Introduction to Polymer Science and Engineering	3
TMS 211	Introduction to Fiber Science	3
TT 105	Introduction to Textile Technology	3
TT 327	Yarn Production and Properties	4
TT 331	Performance Evaluation of Textile Materials	4
TT 341	Knitted Fabric Technology	3
TT 351	Woven Products and Processes	3
TT 380	Management and Control of Textile and Apparel Systems	3
TT 401	Textile Technology Senior Design I	4
TT 402	Textile Technology Senior Design II	4

TT 404	Introduction to Nonwovens Products and Processes	3
TT 431	Quality Management and Control In Textile Manufacturing	3
TT 481	Design and Technology of Technical Textiles	3

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Technical Textiles Electives (p. 2)	17
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GEP Courses

GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)	6
GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)	3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)	2
GEP Additional Breadth (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/) (Humanities/Social Sciences/Visual and Performing Arts)	3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	5
GEP U.S. Diversity (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-us-diversity/) (verify requirement)	
GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/) (verify requirement)	
Foreign Language Proficiency (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/foreign-language-proficiency/) (verify requirement)	

Total Hours**120****Acad Writing Research**

Code	Title	Hours	Counts towards
Acad Writing Research			
ENG 101	Academic Writing and Research	4	
FLE 101	Academic Writing and Research	4	
Transfer Sequence			
ENG 1GEP	100 Level English Composition	3	
ENG 202	Disciplinary Perspectives in Writing		

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Code	Title	Hours	Counts towards
BME 466	Polymeric Biomaterials Engineering	3	
BME 566	Polymeric Biomaterials Engineering	3	
CH 220	Introductory Organic Chemistry	3	
MSE 201	Structure and Properties of Engineering Materials	3	
MSE 255	Experimental Methods for Structural Analysis of Materials	2	
MSE 300	Structure of Materials at the Nanoscale	3	
MSE 380	Microstructure of Organic Materials	3	
MSE 455	Polymer Technology and Engineering	3	
MT 471	The Chemistry of Synthetic and Natural Bipolymers	3	
NW 405	Advanced Nonwovens Processing	3	
NW 408	Nonwoven Product Development	3	
NW 504	Introduction to Nonwovens Products and Processes	3	

NW 505	Advanced Nonwovens Processing	3
NW 508	Nonwoven Product Development	3
PCC 106		3
PCC 301	Technology of Dyeing and Finishing	3
PCC 304	Technology of Dyeing & Finishing Laboratory	1
PCC 350	Introduction to Color Science and Its Applications	2
PCC 461	Chemistry of Polymeric Materials	3
PCC 466	Polymer Chemistry Laboratory	3
PCC 471	The Chemistry of Synthetic and Natural Bipolymers	3
PY 570	Polymer Physics	3
T 497	Independent Research in Textile Engineering, Chemistry and Materials Science I	1-3
TE 463	Polymer Engineering	3
TE 466	Polymeric Biomaterials Engineering	3
TE 533	Lean Six Sigma Quality	3
TE 550	Clothing Comfort and Personal Protection Science	3
TE 551	Human Physiology for Clothing and Wearables	3
TE 566	Polymeric Biomaterials Engineering	3
TE 570	Polymer Physics	3
TT 405	Advanced Nonwovens Processing	3

TT 407	Characterization Methods in Nonwovens	3
TT 408	Nonwoven Product Development	3
TT 504	Introduction to Nonwovens Products and Processes	3
TT 505	Advanced Nonwovens Processing	3
TT 508	Nonwoven Product Development	3
TT 533	Lean Six Sigma Quality	3
TTM 533	Lean Six Sigma Quality	3

Semester Sequence

This is a sample.

First Year

Fall Semester		Hours
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory ¹	4
ENG 101	Academic Writing and Research	4
MA 141	Calculus I ¹	4
TT 105	Introduction to Textile Technology (CP)	3
T 101	Strategies for Success in the Wilson College of Textiles	1

Hours 16

Spring Semester

MA 241	Calculus II	4
PY 205 & PY 206	Physics for Engineers and Scientists I and Physics for Engineers and Scientists I Laboratory	4
TMS 211	Introduction to Fiber Science	3
FTM 217	The Textile Industry	3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1

Hours 15

Second Year

Fall Semester		Hours
EC 205	Fundamentals of Economics	3
PY 208 & PY 209	Physics for Engineers and Scientists II and Physics for Engineers and Scientists II Laboratory	4
TT 327	Yarn Production and Properties (CP)	4
TT 380	Management and Control of Textile and Apparel Systems	3

GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)	3
Hours	17
Spring Semester	
ST 311 Introduction to Statistics	3
TE 200 Introduction to Polymer Science and Engineering	3
Technical Textiles Elective (p. 2)	3
TT 351 Woven Products and Processes (CP)	3
TT 341 Knitted Fabric Technology (CP)	3
Hours	15
Third Year	
Fall Semester	
TT 404 Introduction to Nonwovens Products and Processes	3
GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)	3
Technical Textiles elective (p. 2)	3
PCC 302 Technology of Textile Wet Processing	4
TT 481 Design and Technology of Technical Textiles	3
Hours	16
Spring Semester	
TT 331 Performance Evaluation of Textile Materials (CP)	4
GEP Additional Breadth (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/) (Humanities/Social Sciences/Visual and Performing Arts)	3
MT 366 Biotextile Product Development	3
Select two Technical Textiles electives (p. 2)	5-6
Hours	15
Fourth Year	
Fall Semester	
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	2-3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)	1
TT 401 Textile Technology Senior Design I	4
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)	3
Textile Textiles Elective (p. 2)	3
Hours	13
Spring Semester	
Technical Textile Elective (p. 2)	3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	2-3
TT 402 Textile Technology Senior Design II	4
TT 431 Quality Management and Control In Textile Manufacturing	3
Hours	13
Total Hours	120

¹ Must be completed with a grade of C- or higher for major requirements