

Technology, Engineering and Design Education (BS): Licensure Concentration

The degree of Bachelor of Science in Technology, Engineering, and Design Education is offered by the Department of STEM Education in the College of Education. With an emphasis on innovation and active learning, this program prepares individuals for a variety of engineering and design employment opportunities, including a teacher licensure option and a non-licensure graphics communications option.

Teacher Licensure

Through the study of engineering and design processes, students learn how to solve technological problems, innovate and invent. They actively design, model, simulate and analyze solutions to technological challenges studies courses and explore the contributions of systems engineering for developing and sustaining a well-designed world. Methods in teaching middle and high school students about engineering and design processes are also covered.

The goals and objectives of the BS degree in Technology, Engineering, and Design Education: Teaching Licensure are:

- Develop technical skills and an understanding of technical processes
- Develop the ability to apply knowledge, skill and creativity in solving technical problems
- Understand and appreciate the historical evolution of technology
- Understand and assess the impact of current technological developments and trends
- Demonstrate an ability to teach others about technology

For more information about this program, visit our website (<https://ced.ncsu.edu/stem-ed/>).

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Plan Requirements

Code	Title	Hours
Writing and Speaking		
COM 110	Public Speaking	3
ENG 101	Academic Writing and Research ¹	4
Social Sciences and IP		
PSY 376	Developmental Psychology	3
STS 302	Contemporary Science, Technology and Human Values	3
Mathematical and Natural Sciences		
MA 103	Topics in Contemporary Mathematics ¹	3
Select one of the following: ¹		3
MA 121	Elements of Calculus	
MA 131	Calculus for Life and Management Sciences A	
MA 141	Calculus I	
Select one of the following:		4
CH 100	Chemistry and Society	
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	
Select one of the following:		4
PY 131	Conceptual Physics	
PY 201	University Physics I	
PY 205 & PY 206	Physics for Engineers and Scientists I and Physics for Engineers and Scientists I Laboratory	
PY 211	College Physics I	
BIO 105	Biology in the Modern World	3
Professional Technical Content		
D 100 or ISE 216	Design Inquiry I: Methods and Processes ² Product Development and Rapid Prototyping	3
GC 120	Foundations of Graphics ²	3
GC 250	Architectural Graphic Communications ²	3
TDE 110	Materials & Processes Technology ²	3
TDE 131	Technology through Engineering and Design I ²	3
TDE 205	Desktop Publishing and Imaging Technology ²	3
TDE 331	Technology Through Engineering and Design II ²	3
TDE 481	Research & Development in Technology Education ²	3
TDE Technical Electives		
TDE Technical Electives (p. 2) ¹		12
Professional Education		
E 101 or ED 100	Introduction to Engineering & Problem Solving ² Intro to Education	1
ED 204	Introduction to Teaching in Today's Schools ²	2
TDE 202	Introduction to Teaching Technology Engineering and Design Education ²	2
ELP 344	School and Society ²	3
ED 311	Classroom Assessment Principles and Practices ²	2
ED 312	Classroom Assessment Principles and Practices Professional Learning Lab ²	1
EDP 304	Educational Psychology ²	3
ECI 416	Teaching Students with Disabilities in Inclusive Classrooms ²	3

TDE 452	Lab Planning in Technology Education ²	3
TDE 456	Curriculum and Methods in Technology Education ²	4
TDE 457	Student Teaching in Technology Education ²	8
TDE 495	Senior Seminar in Technology Education ²	3
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 Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2
GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/) (verify requirement)		
GEP Foundations of American Democracy (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-fad/) (verify requirement)		
GEP Elective (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
World Language Proficiency (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/) (verify requirement)		
Free Electives		
Free Electives ³		3
Total Hours		120

¹ A grade of C- or higher is required.

² A grade of C or higher is required.

TDE Technical Electives

Code	Title	Hours
GC 320	3D Spatial Relations	3
GC 330	Basic Technical Animation	3
GC 340	Concepts of Website Development	3
GC 350	Applied CAD/D and Geometric Controls	3
GC 420	Visual Thinking	3
GC 450	Advanced Graphics Usage with CAD	3
TDE 230	Scientific and Technical Visualization	3
TDE 261	Digital Media Education	3
TDE 351	Ceramics: The Art and Craft of Clay	3
TDE 359	Electronics Technology	3
TDE 371	Emerging Issues in Technology	3
TDE 385	Robotics Education	3

Semester Sequence

This is a sample.

First Year

Fall Semester		Hours
ED 100 or E 101	Intro to Education ¹ or Introduction to Engineering & Problem Solving	1-2
ENG 101	Academic Writing and Research	4
GC 120	Foundations of Graphics ^{1,2}	3
GEP Mathematical Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/) ⁴		3
TDE 110	Materials & Processes Technology ^{1,2}	3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		15

Spring Semester

Chemistry (p. 1)		3
COM 110	Public Speaking	3
GC 250	Architectural Graphic Communications	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
Calculus (p. 1) ⁴		3
Hours		15

Second Year

Fall Semester

GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Physics (p. 1)		4
ED 204	Introduction to Teaching in Today's Schools ^{1,2}	2
TDE 202	Introduction to Teaching Technology Engineering and Design Education ^{1,2}	2
TDE 131	Technology through Engineering and Design I ^{1,2}	3
TDE 205	Desktop Publishing and Imaging Technology ^{1,2}	3
Hours		15

Spring Semester

BIO 105	Biology in the Modern World	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)		3
ISE 216 or D 100	Product Development and Rapid Prototyping ¹ or Design Inquiry I: Methods and Processes	3
TDE Technical Electives (p. 2) ³		3
Hours		15

Third Year

Fall Semester

ED 311	Classroom Assessment Principles and Practices ¹	2
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ED 312	Classroom Assessment Principles and Practices Professional Learning Lab ¹	1
EDP 304	Educational Psychology ¹	3
ELP 344	School and Society ¹	3
TDE Technical Electives (p. 2) ³		3
TDE Technical Electives (p. 2) ³		3
Hours		15
Spring Semester		
PSY 376	Developmental Psychology	3
GEP Elective (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
STS 302	Contemporary Science, Technology and Human Values	3
TDE 331	Technology Through Engineering and Design II ¹	3
TDE Technical Electives (p. 2) ³		3
Hours		15
Fourth Year		
Fall Semester		
ECI 416	Teaching Students with Disabilities in Inclusive Classrooms	3
Free Electives		4
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2
TDE 456	Curriculum and Methods in Technology Education	4
TDE 481	Research & Development in Technology Education ¹	3
Hours		16
Spring Semester		
TDE 452	Lab Planning in Technology Education ¹	3
TDE 457	Student Teaching in Technology Education ¹	8
TDE 495	Senior Seminar in Technology Education ¹	3
Hours		14
Total Hours		120

¹ A grade of C or higher is required.

² Critical Path (CP): This course is required in the first year of TDE and part of the critical path.

³ A grade of C- or higher is required.

⁴ Only one course in this category may be passed with a D. The other course must be at least a C-.

Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (<https://www.careeronestop.org/>)

View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (<https://careers.dasa.ncsu.edu/explore-careers/career-assessments/>) (NC State student email address required) This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (<https://careers.dasa.ncsu.edu/about/hours-appointments/>) to discuss the results.

Focus 2 Apply Assessment (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (Available to prospective students)

A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

Career Opportunities

Career Titles

Learn More About Careers

NCcareers.org (<https://nccareers.org/>)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (<https://www.bls.gov/ooh/>)