

# Technology, Engineering and Design Education (BS): Graphic Communication 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.

## Graphics Communications

Through the study of technical graphics language and design processes, students learn how to think in the language of graphics to effectively communicate ideas and solve technical problems. They actively visualize, design, model, simulate, analyze, and document solutions in technical graphics studies courses and explore the role graphics play in all areas of engineering.

The goals and objectives of the BS degree in Technology, Engineering, and Design Education: Graphic Communications Option are:

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

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

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## Plan Requirements

Code	Title	Hours	Counts towards
<b>Management Electives</b>			
Management Electives (p. 2)		12	
<b>Writing and Speaking</b>			
COM 110	Public Speaking	3	
ENG 101	Academic Writing and Research <sup>1</sup>	4	
<b>Social Sciences and IP</b>			
PSY 376	Developmental Psychology	3	
STS 302	Contemporary Science, Technology and Human Values	3	
<b>Mathematical and Natural Sciences</b>			
MA 103	Topics in Contemporary Mathematics <sup>1</sup>	3	
Calculus - Select one of the following: <sup>1</sup>		3	
MA 121	Elements of Calculus		
MA 131	Calculus for Life and Management Sciences A		
MA 141	Calculus I		
Chemistry - Select one of the following:		4	
CH 100	Chemistry and Society		
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory		
Physics - 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	
<b>Professional Education</b>			

E 101	Introduction to Engineering & Problem Solving <sup>2</sup>	1
or ED 100	Intro to Education	
ELP 344	School and Society <sup>2</sup>	3
EDP 304	Educational Psychology <sup>2</sup>	3
TDE 452	Lab Planning in Technology Education <sup>2</sup>	3
TDE 407	Field Work in Technology Education <sup>2</sup>	6

**GC Technical Electives**GC Technical Electives (p. 4)<sup>1</sup> 18**Professional Technical Content**

D 100	Design Inquiry I: Methods and Processes <sup>2</sup>	3
or ISE 216	Product Development and Rapid Prototyping	
GC 120	Foundations of Graphics <sup>2</sup>	3
GC 250	Architectural Graphic Communications <sup>2</sup>	3
TDE 110	Materials & Processes Technology <sup>2</sup>	3
TDE 131	Technology through Engineering and Design I <sup>2</sup>	3
TDE 205	Desktop Publishing and Imaging Technology <sup>2</sup>	3
TDE 331	Technology Through Engineering and Design II <sup>2</sup>	3
TDE 481	Research & Development in Technology Education <sup>2</sup>	3

**GEP Courses**

GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )	6
GEP Social Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/</a> )	3

GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )	2
GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )	2
GEP Elective ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> )	3
GEP Global Knowledge ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/</a> ) (verify requirement)	
World Language Proficiency ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/</a> ) (verify requirement)	
<b>Free Electives</b>	
Free Electives <sup>3</sup>	4
<b>Total Hours</b>	<b>120</b>

<sup>1</sup> A grade of C- or higher is required.<sup>2</sup> A grade of C or higher is required.<sup>3</sup> Students should consult their academic advisors to determine which courses fill this requirement.**Management Electives**

Code	Title	Hours	Counts towards
ACC 200	Introduction to Managerial Accounting	3	
ACC 210	Concepts of Financial Reporting	3	
ACC 220	Introduction to Managerial Accounting	3	
ACC 280	Survey of Financial and Managerial Accounting	3	
AFS 305	Racial and Ethnic Relations	3	
ANT 261	Technology in Society and Culture	3	
ARE 201	Introduction to Agricultural & Resource Economics	3	

ARE 201A	Introduction to Agricultural & Resource Economics	3	EC 449	International Finance	3
ARE 301	Intermediate Microeconomics	3	EC 451	Econometrics II	3
ARE 304	Agribusiness Management	3	EC 468	Game Theory	3
ARE 309	Environmental Law & Economic Policy	3	EC 474	Economics of Financial Institutions and Markets	3
ARE 336	Introduction to Resource and Environmental Economics	3	EC 480		3
BUS 320	Financial Management	3	EC 490	Research Seminar in Economics	3
BUS 340	Information Systems Management	3	EC 495	Special Topics in Economics	1-6
BUS 350	Economics and Business Statistics	3	EC 498	Independent Study in Economics	1-6
BUS 360	Marketing Methods	3	ENG 331	Communication for Engineering and Technology	3
BUS 370	Operations and Supply Chain Management	3	ENG 332	Communication for Business and Management	3
EC 201	Principles of Microeconomics	3	ENG 333	Communication for Science and Research	3
EC 202	Principles of Macroeconomics	3	MA 105	Mathematics of Finance	3
EC 205	Fundamentals of Economics	3	MA 231	Calculus for Life and Management Sciences B	3
EC 301	Intermediate Microeconomics	3	MA 241	Calculus II	4
EC 302	Intermediate Macroeconomics	3	MA 242	Calculus III	4
EC 305	A Closer Look at Capitalism	3	MIE 201	Introduction to Business Processes	3
EC 336	Introduction to Resource and Environmental Economics	3	MIE 330	Human Resource Management	3
EC 348	Introduction to International Economics	3	MIE 335	Organizational Behavior	3
EC 351	Econometrics I	3	MIE 432	Employee Relations	3
EC 404	Money, Financial Markets, and the Economy	3	PHI 214	Issues in Business Ethics	3
EC 410	Public Finance	3	PS 201	American Politics and Government	3
EC 413	Industrial Organization	3	PS 202	State and Local Government	3
EC 431	Labor Economics	3	PS 203	Introduction to Nonprofits	3
EC 437		3	PS 231	Introduction to International Relations	3
			PS 236	Issues in Global Politics	3
			PS 303	Race in U.S. Politics	3

PS 309	Equality and Justice in United States Law	3
PS 310	Public Policy	3
PS 312	Introduction to Public Administration	3
PS 314	Science, Technology and Public Policy	3
PS 320	U.S. Environmental Law and Politics	3
PS 335	International Law	3
PS 336	Global Environmental Politics	3
PS 418	Gender Law and Policies	3
PSY 200	Introduction to Psychology	3
PSY 307	Industrial and Organizational Psychology	3
PSY 311	Social Psychology	3
PSY 312	Applied Psychology	3
PSY 340	Human Factors Psychology	3
PSY 411	The Psychology of Interdependence and Race	3
SOC 205	Jobs and Work	3
SOC 261	Technology in Society and Culture	3
SOC 305	Racial and Ethnic Relations	3
ST 311	Introduction to Statistics	3
ST 350	Economics and Business Statistics	3
STS 214	Introduction to Science, Technology, and Society	3
WGS 418	Gender Law and Policies	3

## GC Technical Electives

Code	Title	Hours	Counts towards
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 <sup>1</sup> or Introduction to Engineering & Problem Solving	1-2
ENG 101	Academic Writing and Research	4
GC 120	Foundations of Graphics <sup>1,2</sup>	3
GEP Mathematical Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-mathematical-sciences/</a> ) <sup>4</sup>		3
TDE 110	Materials & Processes Technology <sup>3</sup>	3
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )		1
<b>Hours</b>		<b>15</b>

### Spring Semester

COM 110	Public Speaking	3
Calculus (p. 1) <sup>4</sup>		3-4
MA 121	Elements of Calculus	
MA 131	Calculus for Life and Management Sciences A	
MA 141	Calculus I	
Chemistry (p. 1)		4
TDE 205	Desktop Publishing and Imaging Technology <sup>1,2</sup>	3

GC Technical Elective (p. 4) <sup>3</sup>	3
<b>Hours</b>	<b>16</b>

**Second Year****Fall Semester**

Management Elective (p. 2)	3
GC 250 Architectural Graphic Communications <sup>1</sup>	3
TDE 131 Technology through Engineering and Design I <sup>1,2</sup>	3
Physics (p. 1)	4
EDP 304 Educational Psychology <sup>1</sup>	3
<b>Hours</b>	<b>16</b>

**Spring Semester**

GC Technical Elective (p. 4) <sup>3</sup>	3
BIO 105 Biology in the Modern World	3
GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )	3
ISE 216 Product Development and Rapid Prototyping <sup>1</sup>	3
GEP Elective ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> )	3
<b>Hours</b>	<b>15</b>

**Third Year****Fall Semester**

Management Elective (p. 2)	3
ELP 344 School and Society <sup>1</sup>	3
GC Technical Elective (p. 4) <sup>3</sup>	3
GEP Social Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/</a> )	3
GC Technical Elective (p. 4) <sup>3</sup>	3
<b>Hours</b>	<b>15</b>

**Spring Semester**

PSY 376 Developmental Psychology	3
Management Elective (p. 2)	3
TDE 331 Technology Through Engineering and Design II <sup>1</sup>	3
GC Technical Elective (p. 4) <sup>3</sup>	3
STS 302 Contemporary Science, Technology and Human Values	3
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )	1
<b>Hours</b>	<b>16</b>

**Fourth Year****Fall Semester**

GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )	2-3
GC Technical Elective (p. 4) <sup>3</sup>	3
TDE 481 Research & Development in Technology Education <sup>1</sup>	3
Management Elective (p. 2)	3
GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )	3
<b>Hours</b>	<b>14</b>

**Spring Semester**

TDE 452 Lab Planning in Technology Education <sup>1</sup>	3
TDE 407 Field Work in Technology Education <sup>1</sup>	6
Free Electives	4
<b>Hours</b>	<b>13</b>
<b>Total Hours</b>	<b>120</b>

<sup>1</sup> A grade of C or higher is required.

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

<sup>3</sup> A C- or better is required for courses in this category

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

**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/>)

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.