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
Management Electives			
Management Electives (p. 2)		12	
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	
Calculus - 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		
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	
Professional Education			

E 101	Introduction to Engineering & Problem Solving [2]	1
or ED 100	Intro to Education	
ELP 344	School and Society [2]	3
EDP 304	Educational Psychology [2]	3
TDE 452	Lab Planning in Technology Education [2]	3
TDE 407	Field Work in Technology Education [2]	6
GC Technical Electives		
GC Technical Electives (p. 4) [1]		18
Professional Technical Content		
D 100	Design Inquiry I: Methods and Processes [2]	3
or ISE 216	Product Development and Rapid Prototyping	
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
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 US Diversity, Equity, and Inclusion (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-usdei/)		3
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)		
Free Electives		
Free Electives [3]		4
Total Hours		**120**

[1] A grade of C- or higher is required.
[2] A grade of C or higher is required.
[3] 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
ARE 301	Intermediate Microeconomics	3
ARE 304	Agribusiness Management	3
ARE 309	Environmental Law & Economic Policy	3
ARE 336	Introduction to Resource and Environmental Economics	3
BUS 320	Financial Management	3
BUS 340	Information Systems Management	3
BUS 350	Economics and Business Statistics	3
BUS 360	Marketing Methods	3
BUS 370	Operations and Supply Chain Management	3
EC 201	Principles of Microeconomics	3
EC 202	Principles of Macroeconomics	3
EC 205	Fundamentals of Economics	3
EC 301	Intermediate Microeconomics	3
EC 302	Intermediate Macroeconomics	3
EC 305	A Closer Look at Capitalism	3
EC 336	Introduction to Resource and Environmental Economics	3
EC 348	Introduction to International Economics	3
EC 351	Econometrics I	3
EC 404	Money, Financial Markets, and the Economy	3
EC 410	Public Finance	3
EC 413	Industrial Organization	3
EC 431	Labor Economics	3
EC 437		3
EC 449	International Finance	3
EC 451	Econometrics II	3
EC 468	Game Theory	3
EC 474	Economics of Financial Institutions and Markets	3
EC 480		3
EC 490	Research Seminar in Economics	3
EC 495	Special Topics in Economics	1-6
EC 498	Independent Study in Economics	1-6
ENG 331	Communication for Engineering and Technology	3
ENG 332	Communication for Business and Management	3
ENG 333	Communication for Science and Research	3
MA 105	Mathematics of Finance	3
MA 231	Calculus for Life and Management Sciences B	3
MA 241	Calculus II	4
MA 242	Calculus III	4
MIE 201	Introduction to Business Processes	3
MIE 330	Human Resource Management	3
MIE 335	Organizational Behavior	3
MIE 432	Labor and Employee Relations	3
PHI 214	Issues in Business Ethics	3
PS 201	American Politics and Government	3
PS 202	State and Local Government	3
PS 203	Introduction to Nonprofits	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 [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 [3]	3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
	Hours	**15**
Spring Semester		
COM 110	Public Speaking	3
Calculus (p. 1) [4]		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 [1,2]	3
GC Technical Elective (p. 4) [3]		3
	Hours	**16**
Second Year		
Fall Semester		
Management Elective (p. 2)		3
GC 250	Architectural Graphic Communications [1]	3
TDE 131	Technology through Engineering and Design I [1,2]	3
Physics (p. 1)		4
EDP 304	Educational Psychology [1]	3
	Hours	**16**
Spring Semester		
GC Technical Elective (p. 4) [3]		3
BIO 105	Biology in the Modern World	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
ISE 216	Product Development and Rapid Prototyping [1]	3
GEP US Diversity, Equity, and Inclusion (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-usdei/)		3
	Hours	**15**
Third Year		
Fall Semester		
Management Elective (p. 2)		3
ELP 344	School and Society [1]	3
GC Technical Elective (p. 4) [3]		3
GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)		3
GC Technical Elective (p. 4) [3]		3
	Hours	**15**
Spring Semester		
PSY 376	Developmental Psychology	3
Management Elective (p. 2)		3
TDE 331	Technology Through Engineering and Design II [1]	3
GC Technical Elective (p. 4) [3]		3
STS 302	Contemporary Science, Technology and Human Values	3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
	Hours	**16**
Fourth Year		
Fall Semester		
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2-3
GC Technical Elective (p. 4) [3]		3
TDE 481	Research & Development in Technology Education [1]	3
Management Elective (p. 2)		3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
	Hours	**14**
Spring Semester		
TDE 452	Lab Planning in Technology Education [1]	3
TDE 407	Field Work in Technology Education [1]	6
Free Electives		4
	Hours	**13**
	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 C- or better is required for courses in this category
4. Only one course in this category may be passed with a D. The other course must be at least a C-.