Department of Graphic Design Technology

http://www.ncat.edu/cost/departments/gdt/index.html

Vincent Childress, Interim Chairperson

OBJECTIVES
The major objective of the Department of Graphic Design Technology is to provide quality competency-based instruction so that men and women will be prepared to enter the fields of graphic design and technology. In addition, the Department assists majors in developing those critical competencies in the sciences, communications, mathematics, and technical specialties essential to securing positions in related industrial, business and government careers.

DEGREES OFFERED
Graphic Communication Systems – Bachelor of Science

GENERAL PROGRAM REQUIREMENTS
Student admission to undergraduate degree programs in the Department of Graphic Design Technology is based on general admission requirements of the University.
Community college and technical institute graduates and other transfer students may be admitted to undergraduate Graphic Design Technology programs with advanced classification by submitting credentials to the University Admissions Office for individual assessment. The maximum transfer credit from Associate Degree technical programs is 60 semester hours or approximately junior status. Students transferring to the Department of Graphic Design Technology from other disciplines must have a minimum of 2.5 grade point average.

DEPARTMENTAL REQUIREMENTS
Students are required to complete 120 semester hours of University course work. A minimum grade of “C” must be earned in all major (GCS) courses. Students must maintain a grade point average of 2.0 or better for all course work.
NOTE: Transfer students and persons applying college credits earned through competency examinations may apply a maximum of 24 semester hours of credit toward meeting technical course requirements in degree programs.

ACCREDITATION
The Graphic Communication Systems program is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

CAREER OPPORTUNITIES
Graduates of the Graphic Communication Systems program option have a variety of career options in management, production, design, or sales. A range of opportunities is available in photography, graphic design, design drafting, advertising, in-plant printing, publishing, web design, game design, animation, and geographic information systems.

Department of Graphic Design Technology
Bachelor of Science in Graphic Communication Systems

Major Code: GCS
## Curriculum Guide

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<th>Course</th>
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Total Credit Hours: 120
### MAJOR PROGRAM REQUIREMENTS

Students must earn a C or better in the following courses:

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### TRACK COURSE ELECTIVES

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Design Drafting Track

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<td>GCS 320 and GCS 324</td>
<td>GCS 422 and GCS 424 (formerly 327/430)</td>
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COURSE DESCRIPTIONS IN GRAPHIC DESIGN TECHNOLOGY

GCS 100. Graphic and Technology Education Freshmen Orientation  
Credit 1(1-0)  
This course covers orientation to college academic life with consideration for program demands, learning techniques and resources.

GCS 121. Computer Aided Design I  
Credit 3(2-2)  
This course focuses on basic orthographic projection, sketching, dimensioning and drafting conventions, as related to the construction and manufacturing industries. It introduces drafting technology tools, practices and procedures. The student will develop skills in technical sketching and page layout. Computer aided design software applications will be introduced. (F;S;SS)

GCS 124. Two Dimensional Design Drafting (formerly GCS 221)  
Credit 3(2-2)  
This course presents an opportunity for students to enhance technical ideas and concepts in a computer aided design environment. Emphasis is placed on the manipulation of software applications to interpret and produce working drawings. Skills and knowledge will be developed to graphically communicate resolutions to existing STEM problems in fabricated and built environments. Prerequisite: GCS 121. (F;S;SS)

GCS 130. Graphic Communications Technology  
Credit 3(2-2)  
Basic principles of graphic design, pre-press preparation, reproduction methods, and bindery operation are taught in a laboratory setting. Historical, socioeconomic, organizational and career opportunities in graphic communications and allied industries are investigated in reference to graphic communications, business and industries. Hands-on laboratory work will introduce students to the equipment and processes employed in the print production. Prerequisite: GCS 110. (F;S;S)

GCS 133. Introduction to Drafting Technology  
Credit 3(2-2)  
Basic orthographic projection is emphasized. This course is an introduction to drafting technology tools and procedures. Other topics include lettering, geometric construction, pictorials, auxiliaries, sections, and dimensioning. (F;S;SS)

GCS 142. Printing Workflows and Processes  
Credit 3(2-2)  
This course introduces the student to the various software solutions and production techniques involved in the printing and publishing industry. Proper workflow and quality control instruments and techniques will be covered. Students will gain experience in obtaining digital images suitable for print, image manipulation, art development, and page layout. Preflight and quality techniques involved in image output will be stressed. Prerequisite: GCS 281. (S;SS)

GCS 211. Evolution and Social Implications of Technology Education  
Credit 3(3-0)  
This course is the study of technology systems. An investigation of past and present impact on the individual and society will take place. Potential of future change influenced by technological change and application is addressed through technological assessment and forecasting. (F;S;SS)

GCS 212. Technical Communication  
Credit 3(3-0)  
This course is designed to develop the student’s proficiency in researching, organizing, writing, and presenting documents in various areas of technology. Prerequisites: ENGL 101 and Sophomore Standing. (F;S;SS)

GCS 223. Intermediate Architectural Design  
Credit 3(2-2)  
This course deals with the planning of industrial, commercial and public buildings. Topics include construction and design principals, materials specifications and codes; complete plans (plot, landscaping, framing, electrical and mechanical equipment), details (reinforced concrete, timber and steel), advanced perspective rendering, analytical study of historical and contemporary architecture, materials and methods, and engineering. Prerequisite: GCS 222. (S;SS)

GCS 224. Solid Modeling  
Credit 3(2-2)  
This course addresses manipulation and analysis of data associated with the fabrication and functionality of product subassemblies, assemblies, and other objects related to STEM processes. Students will integrate solid modeling principles to graphically communicate information about these objects. Emphasis will be placed on the application and interpretation of dimensioning and tolerancing information. Prerequisite: GCS 124. (F;S;SS)
GCS 225. Solid Modeling II
Credit 3(2-2)
This course provides opportunities to integrate assembly modeling principles to graphically communicate information about mechanical products. Students will analyze and evaluate the assembly and functionality of mechanical products using solid modeling applications. Attention will be given to advanced topics relevant to the application and interpretation of dimensioning and tolerancing that pertain to manufactured products. Prerequisite: GCS 224. (S;SS)

GCS 230. Photography for Graphic Communication formerly (GCS 330)
Credit 3(2-2)
This course is designed to acquaint the beginner with the fundamental knowledge of digital photography. Historical evolution and modern uses of photography will be studied. Nomenclature, theory, and application in photo composition, imaging, and presentation methods will be explored. Each student is required to provide a camera. Prerequisite: TECH 103. (F;S;SS)

GCS 242. Flexography I
Credit 3(2-2)
This course is designed to develop proficiency in flexographic printing and design. Students will be introduced to flexographic layout, film preparation, plate exposing and mounting, presswork and converting. Flexographic package design will be explored and students will receive hands-on experience in designing die lines, and preparing graphics to meet customer requirements. Prerequisite: GCS 281. (F;S;SS)

GCS 243. Screen Printing Technology
Credit 3(2-2)
This course provides broad and thorough knowledge and skills to transfer images through a stencil onto a substrate. Techniques of image design, screen preparation, screen exposing, and screenprinting will be studied. Students will gain hands-on laboratory experience in screen printing paper and textile substrates. Prerequisite: GCS 281. (F;S;SS)

GCS 281. Graphic Communication Design Foundations (formerly GCS 181)
Credit 3(2-2)
This course introduces the elements and principles of design through a concentrated study of its theory and application and by assignments in two- and three-dimensional projects. Through the language of design, students will build and apply design skills, knowledge, and methods in a variety of media. Students begin their portfolios. Prerequisite: TECH 103. (F;S;SS)

GCS 285. Digital Image Editing
Credit 3(2-2)
This course covers the use of digital graphic techniques to create and manipulate photographic and other raster graphic images. Digital imaging techniques through the use of photo manipulation software for web and print are explored. Prerequisite: GCS 281 or Consent of Instructor. (S;SS)

GCS 286. Technical Illustration
Credit 3(2-2)
The principles of graphic design, including design process, color, type and art components are discussed. Techniques for representing visual ideas, editing paths, and exporting illustration artwork for print production and web design are explored. Prerequisite: GCS 281 or Consent of Instructor. (S;SS)

GCS 310. Color Management formerly GCS 185
Credit 3(2-2)
This course is a study of managing color for graphic design. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. Prerequisite: GCS 281. (S;SS) GCS 320. Architectural Design Drafting
Credit 3(2-2)
This course addresses basic design principles and construction processes relevant to architectural structures. Site development, operational and structural systems, material specifications, building codes and construction processes and procedures will be addressed. The course will introduce learners to sustainable design concepts and building information modeling (BIM) technology. Prerequisite: GCS 124. (S)

GCS 321. Digital Architecture
Credit 3(2-2)
This course provides advanced techniques in the development of architectural presentation using photography, multimedia and digital video. This course is for students interested in creative methods and techniques for architectural presentation. Prerequisite: GCS 223. (F;SS)

GCS 322. Architectural Animation and Rendering
Credit 3(2-2)
In this course students participate in developing animations, interior and exterior renderings of buildings and the built environments. Emphasis is placed on 3D animation creativity and rendering technology. Prerequisites: GCS 321. (F;SS)

GCS 323. Structural and Schematic Design
Credit 3(2-2)
Given the structural and schematic design of a building, students will prepare both the structural plan and the shop details necessary for the fabrication of the structural members. Students will also study pipe fittings, symbols, specifications and their applications to a piping process system. Emphasis will be placed on the graphic representation of electrical, mechanical, structural and piping devices found in manufacturing and building construction. Prerequisite: Junior standing or consent of instructor. (F;S)

GCS 324. Technical and Mechanical Graphic Applications
Credit 3(2-2)
This course will require the student to demonstrate skills in the use of CADD software commonly found in the mechanical and manufacturing environments. Further, the students will write and incorporate the use of spreadsheets and basic
programming to communicate effectively with members of a multi-disciplinary team. Emphasis will be placed on solving technical and STEM problems with a graphical component. Prerequisite: GCS 224. (S)

**GCS 325. Intermediate Machine Design**
Credit 3(2-2)
This course covers intermediate drafting and design techniques associated with machine components and assembly. Topics include tool design and material selection, work-holding principles, design of jigs, fixtures and press working tools, inspection and gauging, joining processes, modular tooling, and economics of design. Prerequisites: GCS 324. (S;SS)

**GCS 329. Typography Communication and Design**
Credit 3(2-2)
This course introduces the letter forms in graphic communication, focusing on the exploration of formal and conceptual relationships, and investigates the design of organizational type structures, resenting complex information in a clear and engaging manner serving utility and aesthetics. Prerequisites: GCS 281. (F;SS)

**GCS 340. Color Management**
Credit 3(3-0)
This course is a study of managing color for graphic design. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. Prerequisite: GCS 181. (S)

**GCS 342. Image Editing and Illustration for Graphic Design**
Credit 3(2-2)
This course builds technical skills with new media tools for image editing, layout, and digital illustration in the context of problem solving in communication design. Design projects will also be assigned to further develop knowledge of problem solving. Prerequisite: GCS 281. (F;SS)

**GCS 343. Graphic Communication Design II**
Credit 3(2-2)
This course encourages further development and application of design, image and typographic principles, and related digital tools integrated into communication design projects of moderate and increasing complexity. Emphasis is also on development of problem solving and building strong concepts that communicate persuasively and effectively. Management of graphic design processes is introduced. Prerequisites: GCS 329, 342. (S)

**GCS 344. Flexography II**
Credit 3(2-2)
Flexographic print production techniques for process color printing will be covered. Color theory and management techniques will be integrated into the production process. Ink and substrate selection and quality control techniques will also be covered. Students will learn the basics of corrugated and paperboard print production through projects requiring both structural and graphic design. Prerequisite: GCS 242. (S;SS)

**GCS 345. Printing Sales and Customer Service**
Credit 3(2-2)
This course focuses on selling techniques and the proper steps involved in the selling process. Students will develop their own techniques through the assigned projects. Effective customer communication and relations are stressed. Prerequisite: GCS 241. (S;SS)

**GCS 346. Package and Structure Design**
Credit 3(2-2)
This course provides the student with the opportunity to implement techniques relevant to the creation of die lines, plot proto-types, create graphic images suitable for substrates, and prepare the image for print. The principles and elements of design are applied. Quality control techniques, color management and press requirements are emphasized. Prerequisite: GCS 342. (S)

**GCS 340. Game Technology and Design I**
Credit 3(2-2)
This course will cover the history and ethics of the video game industry, popular game culture, game design, storytelling, graphic design, and game production. In addition, the students will gain hands-on experience in game technology and design. Students will apply the principles and elements of design. Prerequisite: GCS 281. (S)

**GCS 381. Web Design I**
Credit 3(2-2)
This course provides integration of graphic communication applications, the principles and elements of graphic design, and streamlined workflow for students to design and develop Web sites using Web development software. This course explores the fundamentals of Web design principles and elements. Students will develop dynamic, interactive, and multimedia Web sites. Prerequisite: GCS 281. (F;SS)

**GCS 382. Multimedia and Videography**
Credit 3(2-2)
This course provides an overview of the development and distribution of interactive multimedia for application in web and game design, electronic publication, and design drafting. Students will get hands-on experience in video graphics. Emphasis will be placed on using these tools for learning and communication. The multimedia industry and career opportunities will be examined. Prerequisite: GCS 281. (F;SS)

**GCS 386. Web Design II**
Credit 3(2-2)
This course focuses on building Web sites for businesses. It incorporates the strategies and techniques of Web design into electronic-commerce applications. Students will be exposed to ecommerce Web design elements and client side programming language. Students will develop dynamic, interactive, and multimedia e-commerce Web sites. Students will apply the principles and elements of design. Prerequisites: GCS 381. (S)

**GCS 387. Multimedia and Videography II**
Credit 3(2-2)
Students learn to use an advanced multimedia-authoring package to create interactive multimedia projects that incorporate text, graphics, sound, video and keyframe-based animation. Students are provided opportunities to develop multimedia
applications for manipulation in computer and/or web-based environments. Prerequisite: GCS 382 or Consent of Instructor. (S;SS)

GCS 398. Internship (formerly GCS 498) Credit 3(0-3)
This course is dedicated to providing opportunities for students to develop and apply skills and knowledge appropriate to be successful in a cooperative environment. The student must complete a minimum of 150 contact hours with a corporation relevant to the major and career aspirations. A portfolio journaling the application of skills and knowledge is required. Prerequisite: Junior Standing. (F;S;SS)

GCS 400. Senior Seminar for Graphic Communication and Technology Education Credit 1(1-0)
This course provides a forum for faculty and graduating seniors to address and discuss issues relevant to career placement opportunities and graduate school admission for Graphic Communication and Technology Education undergraduate students. Prerequisite: Graduating Seniors and Consent of Department. (F)

GCS 421. Graphic Communication Design & Management I Credit 3(2-2)
This course encourages further development and application of design, image and typographic principles, advanced design drafting, and related digital tools integrated into graphic design projects of moderate and increasing complexity. Emphasis is also on development of problem solving and building strong concepts that communicate persuasively and effectively. Management of graphic design processes is introduced. Prerequisite: GCS 343. (F)

GCS 422. Three Dimensional Technical Visualization Credit 3(2-2)
This course emphasizes the use of two-dimensional and three dimensional CADD software to solve STEM graphic problems by applying principles of science and mathematics. Students will perform technical calculations and solve STEM problems as technologists. Further, students will be challenged to identify, formulate and develop creative solutions to these technical problems in a variety of broad technical fields. In addition to CADD software, the students will also employ the use of scientific calculators, computers and other related software. Prerequisite: GCS 324. (F)

GCS 423. Graphic Communication Design & Management II Credit 3(3-0)
This course encourages further development and application of design, image and typographic principles, advanced design drafting, and related digital tools integrated into graphic design projects of advanced complexity. Emphasis is also on development of problem solving and building strong concepts that communicate persuasively and effectively. Management of graphic design processes is more deeply covered. Prerequisite: GCS 421 or GCS 481 or GCS 422. (S)

GCS 424. Introduction to Geographic Information Systems (formerly GCS 327) Credit 3(2-2)
This course introduces fundamental concepts of geographic information systems. Learners will integrate the latest in GIS technology to create maps, find information, and manipulate geographic data to communicate resolutions to a variety of geographic problems. (F)

GCS 425. Intermediate Geographic Information Systems (formerly GCS 328) Credit 3(2-2)
This course provides opportunities to apply GIS applications within a workflow context. Emphasis will be placed on working with data stored in a geodatabase and performing geoprocessing and analysis. Learners will prepare, organize, and edit data for analysis and manipulation using geoprocessing models. Prerequisite: GCS 424. (S)

GCS 426. Graphic Animation Credit 3(2-2)
This course focuses on the creation and manipulation of computer generated objects. Topics include creation of 3D models, assignment of materials, camera and lights, rendering, and animation. The elements and principles of design will be applied. Prerequisite: GCS 281 or Consent of Instructor. (F;SS)

GCS 427. Interdisciplinary Decision Making using GIS Technology Credit 3(2-2)
This course is a study of GIS technology as it is applied to multiple disciplines in everyday decision that affect the general population. Emphasis is placed on research and data collection for decision modeling using GIS in business, sociology, criminal justice, ethnicity, landscape architecture, disaster management, urban planning, health and economics. Prerequisite: GCS 425. (S)

GCS 428. Computer Aided Design and Drafting Productivity Credit 3(3-0)
This course is a study of certain skill sets needed to be proficient in the AutoCAD applications. These skill sets will emphasize interface customization, printing controls, task-oriented AutoLISP programming and similar other topics. The course is intended to supplement and enhance the existing skills of AutoCAD users. Prerequisite: Senior Standing. (F)

GCS 429. Computer Aided Design and Drafting Management Credit 3(3-0)
This course will explore computer aided design and drafting (CADD) management topics such as management skills needed for staffing a CADD department, development of communication skills, effective staff management, efficient files storage and retrieval, office procedures and CADD standards. The students will investigate solutions to the problems in implementation, enforcement and growth of CADD applications. Prerequisite: GCS 428 or consent of instructor. (F)

GCS 430. Geographic Information Systems Credit 3(3-0)
This course covers fundamental concepts of geographic information systems. Learners will integrate the latest in GIS technology to create maps, find information, and manipulate geographic data to communicate resolutions to a variety of interdisciplinary geographic problems. Prerequisite: GCS 324. (F)

GCS 441. Workflow, Estimating, and Customer Service in Graphic Communication Credit 3(3-0)
Cost estimating variables within publication design, electronic media design, and drafting design will be explored.
Appropriate mathematical formulas will be introduced for pricing out production projects to improve cost controls, production techniques, and ensure company profitability. Proper workflow and quality control instruments and techniques will be covered. Students will gain experience in obtaining digital images suitable for print, image manipulation, art development, and page layout. Prerequisites: Senior Standing. (S)

**GCS 442. Graphic Communication Technology Entrepreneurship & Management**  
*Credit 3(3-0)*  
This course will acquaint the student with project based entrepreneurship and management skills related to various areas of a graphic communications company. Concepts will be learned through practical applications. Prerequisite: Senior Standing. (S)

**GCS 446. Retail Ready Package and Display Design**  
*Credit 3(2-2)*  
This course provides the student with the opportunity to implement techniques relevant to the creation of die lines, plot proto-types, create graphic images suitable for substrates, and prepare the image for print for the purpose of creating point-of-purchase displays, an advanced packaging design competency. The principles and elements of design are applied. Quality control techniques, color management and press requirements are emphasized. Prerequisite: GCS 346. (F)

**GCS 461. Senior Capstone for Graphic Communication Systems**  
*Credit 3(3-0)*  
This course is dedicated to the demonstration and the assessment of the mastery of skills, knowledge and attitudes through portfolio completion and project work upon successful completion of a program of study relevant to communication and design. Prerequisite: Senior standing. (F;S)

**GCS 480. Web Design III**  
*Credit 3(3-0)*  
This course integrates the strategies and techniques of multimedia into distance learning applications. Areas of emphasis include Web page development and management unique to distance learning delivery systems for the Internet. Students will be introduced to e-learning Web design elements and server side programming language. Students will develop dynamic, interactive, and multimedia e-learning Web sites. Prerequisite: GCS 386. (F)

**GCS 481. Game Technology and Design II**  
*Credit 3(2-2)*  
This course is a continuation of Game Technology and Design I. The students will gain advanced hands-on experience in game technology and design. Principles and elements of design will be applied. Prerequisite: GCS 380. (F)

**GCS 490. Independent Study**  
*Credit 3(3-0)*  
This course involves intensive inquiry in a field of technology under the supervision of a faculty advisor. Prerequisite: Approval of instructor. (F;S;SS)

**TECH 101. Introduction to Technology**  
*Credit 3(2-2)*  
Use of the anthropological approach in studying the evolution of technology and its impact on tool development and technological processes. Students will develop problem-solving and manipulative skills through “hands-on” activities in a multiple activity laboratory. The activities will be developed/designed around the technological systems of communication, manufacturing, transportation, and construction. Students will also develop leadership skills through their involvement in the Technology Education Collegiate Association activities. (F;S)

**TECH 103. Computer Applications for Technological Studies (formerly TECH 201)**  
*Credit 3(2-2)*  
This course provides an overview of computer concepts and applications in order to teach problem-solving techniques and interactive applications, and to encourage independent study. Practical problems from academic and real world environments will be integrated into the content. (S)

**DIRECTORY OF FACULTY**

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