Graphic Communications Systems

8494 18 weeks

8458 36 weeks

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Course Description

Suggested Grade Level: 10 or 11 or 12

This course provides experiences related to a wide range of tools and materials used to reproduce information and images. Several mediums are used, including paper, metal, plastic, and fabric. Students develop competencies in message design, composition, and assembly, and message transfer and product conversion.

Recommended Prerequisites: Communications Systems (36 weeks) 8415 or 8418 (18 weeks); OR Technical Drawing and Design (36 weeks) 8435 or (18 weeks) 8434

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (◯) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

Task Number	8458	8494	Tasks/Competencies
Exploring Graphic Communications Technology			
39	⊕	⊕	Define graphic communications technology and terminology.
40	⊕	◯	Research the history and development of graphic communications.
41	⊕	⊕	Analyze the social, cultural, and environmental influences of graphic communications.
Applying Graphic Communications Technology Processes			
42	⊕	⊕	Demonstrate mathematical concepts applied to layout and chemical processes.
43	⊕	⊕	Apply the principles of design and layout.
44	⊕	⊕	Analyze software for a given application.
45	⊕	⊕	Apply appropriate software for a given application.
46	⊕	⊕	Create and edit images and text for digital and printed applications.
47	⊕	⊕	Demonstrate computer proficiency and file management.
48	⊕	◯	Produce interactive presentations.
49	⊕	⊕	Apply various printing procedures to create graphic products.
50	⊕	⊕	Integrate multiple media to create a graphic communications application.
Engineering Solutions for Information and Graphic Communications Systems			
51	⊕	⊕	Apply a problem-solving model to an information and graphic communications problem.

52	⊕	○	Explain the role of invention, innovation, and experimentation in the advancement of information and graphic communications.
Exploring Communications Careers and Advancements			
53	⊕	⊕	Create a portfolio including work from Graphic Communication Systems.
54	⊕	⊕	Research careers related to graphic communications.

Legend: ⊕Essential ○Non-essential ⊖Omitted

Curriculum Framework

Exploring Graphic Communications Technology

Task Number 39

Define graphic communications technology and terminology.

Definition

Definition should incorporate industry vocabulary and include concepts such as

- communication is the sharing of information
- graphic communication is the sharing of information in visual form
- technology enables graphic communication to occur over time and distance.

Process/Skill Questions

- What are some methods of sharing information?
- How can *graphic communication* occur over distance?
- What are the benefits of following industry-accepted vocabulary?
- What are the benefits of following a universal language?

ITEEA National Standards

Task Number 40

Research the history and development of graphic communications.

Definition

Research should focus on digital and printed works and requires the use of a variety of resources to investigate

- inventors and their contributions to the development of information and graphic communications
- significant technological advancements in graphic communications technology through history
- influential and historically important graphic works
- predictions about the future of graphic communications.

Process/Skill Questions

- Why is it important to study past technology associated with the industry?
- Who are the major contributors to the industry and what are their contributions?
- What technological and societal changes have impacted the industry?
- What are some strengths and weaknesses of graphic communications?

ITEEA National Standards

Information and Communication Technologies

The Influence of Technology on History

The Role of Society in the Development and Use of Technology

Task Number 41

Analyze the social, cultural, and environmental influences of graphic communications.

Definition

Analysis should include positive and negative effects on society, culture, and the natural environment that have occurred throughout the development of graphic communications.

Process/Skill Questions

- How is culture affected by graphic communications?
- What are the environmental impacts of various developments in graphic communications?
- How are societal and cultural values reflected in information and graphic communications?

ITEEA National Standards

Information and Communication Technologies

The Influence of Technology on History

The Role of Society in the Development and Use of Technology

Applying Graphic Communications Technology Processes

Task Number 42

Demonstrate mathematical concepts applied to layout and chemical processes.

Definition

Demonstration includes the applications of mathematical concepts, such as

- units
- scales
- proportions

- conversion
- spacing
- registration
- ratios.

Process/Skill Questions

- What is the importance of accurate measurement?
- What are some principles of measurement?
- When would mathematical conversions be required in graphic communication work?

ITEEA National Standards

Information and Communication Technologies

Relationships Among Technologies and the Connections Between Technology and Other Fields

TSA Competitive Events

Biotechnology Design

Webmaster

Task Number 43

Apply the principles of design and layout.

Definition

Application should include

- knowledge of brainstorming and research
- identification and proper use of design principles
- identification and appropriate use of thumbnails and/or storyboards
- application of the theory of color
- composition and layout
- working knowledge of typography
- differentiation between design methods used in layout.

Process/Skill Questions

- What brainstorming tools (e.g., Thinker Toys books) are available to jumpstart the creative process?
- What are the principles of design and layout?
- What are the graphic elements?
- Why follow the principles of design?
- What are benefits and limitations of designing with a thumbnail and/or storyboard?
- What are the elements of typography?
- What should be considered when choosing a typeface?
- How is typography used as a graphic element?
- What should be considered when composing and laying out text?

ITEEA National Standards

Apply Design Processes

Information and Communication Technologies

The Attributes of Design

TSA Competitive Events

Biotechnology Design

Webmaster

Task Number 44

Analyze software for a given application.

Definition

Analysis requires an examination of available software packages. Examination includes

- comparing and contrasting features and capabilities
- considering hardware and budgetary limitations
- choosing the software most suitable to the given application.

Process/Skill Questions

- What considerations are necessary to complete the given application?
- What are examples of hardware limitations to consider?
- How might budgetary constraints influence the decision?

- What are some valuable resources for information on software packages?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Prepared Presentation

Promotional Design

Webmaster

Task Number 45

Apply appropriate software for a given application.

Definition

Application of software includes effective use of software's capabilities to produce a desired outcome.

Process/Skill Questions

- What determines an effective use of the software's capabilities?
- What should be considered when choosing the appropriate output method?

ITEEA National Standards

Assess the Impact of Products and Systems

Information and Communication Technologies

TSA Competitive Events

Prepared Presentation

Promotional Design

Webmaster

Task Number 46

Create and edit images and text for digital and printed applications.

Definition

Generation of images and text requires use of tools and techniques and may include

- applying traditional and digital photographic techniques
- retrieving electronic images
- using software to create images
- applying various user-created designs.

Editing of images and text requires use of tools and techniques and may include

- applying traditional and digital photographic techniques
- using image-editing software
- applying various user-defined editing methods.

Process/Skill Questions

- What are some methods for retrieving electronic images?
- How does the editing process affect the output image?
- What software packages can be used to generate and/or edit images, and what should be considered when choosing a package?
- What other ways can images be generated and/or edited?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Webmaster

Task Number 47

Demonstrate computer proficiency and file management.

Definition

Demonstrating computer proficiency includes

- using various software packages
- managing files
- identifying various file formats (e.g., jpg, svg, gif, tiff, png)
- explaining the difference between vector and raster files
- describing procedures involved with importing and exporting files
- understanding legal restrictions such as trademark and copyright laws.

Process/Skill Questions

- What are storage devices?
- What are files and folders, and how are they related?
- What are methods of outputting data?
- What is the relevance of file extensions?
- How can legal restrictions affect the design process?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Promotional Design

Task Number 48

Produce interactive presentations.

Definition

Production requires the application of two or more media to create a presentation that requires or allows for user participation. Products may include

- Internet applications
- computer-based training
- compact disc, read-only memory (CD-ROM)

- Digital Versatile (or Video) Disc (DVD)
- transferable media.

Process/Skill Questions

- What are the benefits of user participation throughout a presentation?
- What are some examples of interactive Internet applications?
- What should be considered during the planning/design stage?
- What delivery systems are required for various product types?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Prepared Presentation

Scientific Visualization (SciVis)

Video Game Design

Webmaster

Task Number 49

Apply various printing procedures to create graphic products.

Definition

Application includes choosing the appropriate process and substrate for the creation of graphic products. Printing procedures may include

- screen-printing
- sublimation printing
- electronic plotting and printing
- offset printing
- computer numerical control (CNC) methods.

Process/Skill Questions

- What should be considered when determining the appropriate printing procedure?
- How does the substrate factor into choosing the appropriate printing process?
- What software/hardware considerations should influence the selection of an appropriate printing process?
- What are the differences and similarities between electrostatic printing and inkjet printing?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Webmaster

Task Number 50

Integrate multiple media to create a graphic communications application.

Definition

Integration may result in

- publications generated from digital layouts
- graphics and text converted into digital data
- multimedia presentation.

Process/Skill Questions

- How might text and images be converted through a series of digital and physical processes?
- What are the advantages of being able to convert graphics to digital files?
- How might one convert a PDF file to another format?

ITEEA National Standards

Information and Communication Technologies

Use and Maintain Technological Products and Systems

Engineering Solutions for Information and Graphic Communications Systems

Task Number 51

Apply a problem-solving model to an information and graphic communications problem.

Definition

Application requires a systematic approach to solving the problem, including

- evaluating the problem
- generating possible solutions
- analyzing solutions
- choosing appropriate solution
- applying solution
- evaluating the outcome
- troubleshooting, as necessary.

Process/Skill Questions

- What resources should be considered when evaluating the problem?
- What methodology should be used to complete the application?
- What are the benefits of evaluating the outcome?

ITEEA National Standards

The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving

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Task Number 52

Explain the role of invention, innovation, and experimentation in the advancement of information and graphic communications.

Definition

Explanation may include

- evolution of computer printing
- current printing techniques used in mass production.

Process/Skill Questions

- How have significant inventions and innovations changed the information and graphic communications industry?
- How is it determined whether an invention has advanced the industry?
- What factors influence change in the industry?

ITEEA National Standards

The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving

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Exploring Communications Careers and Advancements

Task Number 53

Create a portfolio including work from Graphic Communication Systems.

Definition

Portfolio should include examples of student's work as it relates to Graphic Communication Systems. Examples may include

- desktop publishing projects
- résumé
- photographs
- presentation slide show
- printed graphics.

Process/Skill Questions

- How should you choose content to include in the portfolio?
- What considerations should be made in determining the type of portfolio?
- What considerations should be made in the organization of the portfolio?
- What considerations should be made in determining what should be featured in your résumé?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Photographic Technology

Promotional Design

Task Number 54

Research careers related to graphic communications.

Definition

Research includes the use of a variety of resources to learn about skills and level of education required for various careers in information and graphic communications and the benefits and drawbacks of those careers.

Process/Skill Questions

- What are some career opportunities in information and graphic communications?
- What are the educational requirements for specific careers?
- What should be considered when choosing a career?

ITEEA National Standards

Information and Communication Technologies

TSA Competitive Events

Computer-Aided Design (CAD), Architecture

Computer-Aided Design (CAD), Engineering

Photographic Technology

Promotional Design

SOL Correlation by Task

39	Define graphic communications technology and terminology.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 History and Social Science: WHI.2 Mathematics: COM.1, COM.12
40	Research the history and development of graphic communications.	English: 10.8, 11.8, 12.8 History and Social Science: VUS.1, VUS.13, VUS.14, WHII.1, WHII.13, WHII.14 Mathematics: COM.1

41	Analyze the social, cultural, and environmental influences of graphic communications.	English: 10.5, 11.5, 12.5 History and Social Science: VUS.1, VUS.13, VUS.14, WHII.1, WHII.13, WHII.14
42	Demonstrate mathematical concepts applied to layout and chemical processes.	Mathematics: A.1, A.2, G.3, G.14, AII.1 Science: CH.1g
43	Apply the principles of design and layout.	English: 10.5, 11.5, 12.5 Mathematics: G.3, COM.12
44	Analyze software for a given application.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.1 Mathematics: COM.1
45	Apply appropriate software for a given application.	Mathematics: COM.11
46	Create and edit images and text for digital and printed applications.	History and Social Science: GOVT.1 Mathematics: COM.12
47	Demonstrate computer proficiency and file management.	English: 10.5, 11.5, 12.5 Mathematics: COM.1, COM.10, COM.11
48	Produce interactive presentations.	English: 10.2, 11.2, 12.2 History and Social Science: GOVT.1, VUS.14 Mathematics: COM.10, COM.11
49	Apply various printing procedures to create graphic products.	Mathematics: COM.12
50	Integrate multiple media to create a graphic communications application.	Mathematics: COM.12
51	Apply a problem-solving model to an information and graphic communications problem.	History and Social Science: GOVT.1 Mathematics: COM.1, COM.2
52	Explain the role of invention, innovation, and experimentation in the advancement of information and graphic communications.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.1, VUS.14

| 53 | Create a portfolio including work from Graphic Communication Systems. | English: 10.1, 10.6, 11.1, 11.6, 12.1, 12.6

Mathematics: COM.12 |
|---|---|---|
| 54 | Research careers related to graphic communications. | English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8 |

Entrepreneurship Infusion Units

Entrepreneurship Infusion Units may be used to help students achieve additional, focused competencies and enhance the validated tasks/competencies related to identifying and starting a new business venture. Because the unit is a complement to certain designated courses and is not mandatory, all tasks/competencies are marked "optional."

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- Adobe Certified Associate (ACA) Examinations
- College and Work Readiness Assessment (CWRA+)
- Desktop Publishing Certification - 3D Max Test
- National Career Readiness Certificate Assessment
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Communication Systems (8415/36 weeks)
- Communication Systems (8418/18 weeks)
- Digital Visualization (8459/36 weeks)
- Imaging Technology (8455/36 weeks)
- Imaging Technology (8474/18 weeks)
- Modeling and Simulation Technology (8460/36 weeks)

Career Cluster: Arts, Audio/Video Technology and Communications	
Pathway	**Occupations**
Audio and Video Technology and Film	Audio-Video Designer, Engineer Editor Graphic Designer Multimedia Artist, Animator Producer
Journalism and Broadcasting	Art Director Editor
Printing Technology	Desktop Publisher Job Printer Prepress Technician Press Operator Production, Planning, Expediting Clerk
Visual Arts	Commercial Photographer Fashion Illustrator Graphic Designer Illustrator

Career Cluster: Arts, Audio/Video Technology and Communications	
Pathway	**Occupations**
	Media Planner, Buyer Multimedia Artist, Animator Photographic Process Technician Textile Designer

Career Cluster: Marketing	
Pathway	**Occupations**
Marketing Communications	Art Director Copy Writer Media Planner, Buyer
Marketing Management	Art Director Entrepreneur Media Planner, Buyer
Professional Sales	Media Planner, Buyer