

# **DIGITAL COMMUNICATIONS II: IMAGING**

## Curriculum Content Frameworks

**Please note: All assessment questions will be taken from the knowledge portion of these frameworks.**

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# Curriculum Content Frameworks

## DIGITAL COMMUNICATIONS II: IMAGING

Grade Levels: 10, 11, 12  
Course Code: 492160  
Units of Credit: .5

Prerequisite: Digital Communications I

Course Description: Digital Communications II: Imaging is a one-semester course designed to study the process of editing digital images, photography, and appropriate visual signals to communicate the desired message to an audience effectively. Principles are used to analyze and organize information, set up a design structure, and produce special visual expressions and techniques that are applied to graphics, photos, and video. These techniques are then applied to develop a finished product/portfolio to be used in further education.

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# Unit 1: Hardware/Software & Storage Media

## Hours: 5

**Terminology:** Bluetooth, Burner, Cloud computing, Compact Disk (CD), Digital Video Disk (DVD), Drawing software, Flash drive, Flash memory, Gigabyte (GB), Image editing software, Kiosk, Megabyte (MB), Optical storage, Painting software, Point-and-shoot camera, Scanner, SLR camera, Terabyte (TB), Universal Serial Bus (USB)

<b>CAREER and TECHNICAL SKILLS</b>	
What the Student Should Know	What the Student Should be Able to Demonstrate
<b>Knowledge</b>	<b>Application</b>
1.1 Define terminology	1.1.1 Prepare a list of terms with definitions
1.2 Discuss storage devices	1.2.1 Compare and contrast storage media available and the the storage capacity of each: kilobyte, megabyte, gigabyte, terabyte
	1.2.2 Compare and contrast the advantages and disadvantages of available storage media/hardware
	1.2.3 Access/write using optical storage media (CD/DVD)
	1.2.4 Access/write using optical storage media (CD/DVD)
1.3 Explore emerging methods to deliver and store multimedia and the equipment	1.3.1 Identify basic equipment needed for presentation, i.e. projector, smartboard, Internet, and kiosk
	1.3.2 Identify advantages and disadvantages in current trends and technology; i.e. bluetooth, online storage, cloud computing, file sharing, etc.
1.4 Review the types of software needed to develop media	1.4.1 Compare and constrast different types of software used for developing media projects, i.e. image editing software, drawing software, and painting software
	1.4.2 Discuss situations in which software is appropriate, i.e. creating documents in page layout software, editing photos in image editing software, creating a logo using
1.5 Describe the types of hardware needed to develop media	1.5.1 Identify hardware components used to acquire images, i.e. SLR camera, point and shoot camera, and scanner
	1.5.2 Research the different types of hardware components used to acquire images such as cost, storage size, and specifications

## Unit 2: Photography

### Hours: 10

**Terminology:** Aperture, Card readers, Close up, Digital zoom, Extreme close-up, Flash, Image stabilization, Internal memory, LCD screens, Long shot, Macro zoom, Megapixel, Memory card, Mid Shot, Mode dial, Preview mode, Optical zoom, RAW, Resolution, Rule of thirds, Shutter speed, Tripod, Universal Serial Bus Cables, White balance

<b>CAREER and TECHNICAL SKILLS</b>	
What the Student Should Know	What the Student Should be Able to Demonstrate
<b>Knowledge</b>	<b>Application</b>
2.1 Define terminology	2.1.1 Prepare a list of terms with definitions
2.2 Discuss the basic components of a digital camera	2.2.1 Demonstrate an understanding of the basic components of a digital camera, i.e. storage media, battery, optical zoom, digital zoom, flash, preview mode, mode dial, and LCD screens
	2.2.2 Analyze the relationship between camera resolution and megapixel
	2.2.3 Compare and contrast SLR cameras with point and shoot cameras
2.3 Identify framing techniques in digital photography	2.3.1 Identify the four basic framing shots using photography: long shot, mid shot, close up, extreme close up
	2.3.2 Demonstrate and understand the rule of thirds, point of view, and frame movement
	2.3.3 Take pictures using appropriate composition techniques
2.4 Discuss the different types of digital camera storage and methods of transferring images to a computer	2.4.1 Compare and contrast the types of storage used for the digital camera: SD card, memory stick, internal memory, and compact flash card
	2.4.2 Identify and use methods of transferring digital images: USB cables, bluetooth, card readers
	2.4.3 Construct a file management system for photos (make folders, rename files)

## Unit 3: Graphics Editing

### Hours: 25

**Terminology:** Adobe Illustrator (.ai), Bitmap, Bitmap (.bmp), Brightness, Compression, Feathering, File management system, Gradient, Graphics Interchange Format (.gif), Joint Photographer Experts Group (.jpg), Layering, Lossless, Lossy, Masking, Portable Network Graphics (.png), Rasterize, Red-eye reduction, Shape, Special effects, Tagged Image File (.tif), Text, Transparency, Unzip, Vector, Windows Metafile (.wmf), Zip

<b>CAREER and TECHNICAL SKILLS</b>			
What the Student Should Know		What the Student Should be Able to Demonstrate	
<b>Knowledge</b>		<b>Application</b>	
3.1	Define terminology	3.1.1	Prepare a list of terms with definitions
3.2	Identify the different digital image file formats and compression	3.2.1	Compare and contrast ontrast the two categories of digital images: bitmap and vector
		3.2.2	Identify the different bitmap file formats (such as .bmp, .jpg, .gif, .png, .tif) and their uses
		3.2.3	Identify vector file formats (such as .ai, .wmf, .pdf) and their uses
		3.2.4	Categorize the two different types of compression: lossy and lossless
		3.2.5	Analyze digital file formats in relation to file size and qualities
		3.2.6	Demonstrate the proper procedure to zip and unzip files
		3.2.7	Convert a graphic to a different format
3.3	Identify the software available for creating digital images	3.3.1	Examine software for creating bitmap (paint) and vector (draw) images
		3.3.2	Create bitmap images
		3.3.3	Create vector images
		3.3.4	Convert a vector image into a bitmap (rasterize)
3.4	Demonstrate basic editing techniques	3.4.1	Edit images in the following ways: move, resize, scale, rotate, flip, crop, convert to grayscale
		3.4.2	Create a publication using these basic editing techniques
3.5	Demonstrate advanced editing techniques	3.5.1	Edit images in the following ways: transparency, brightness, contrast, masking, special effects, feathering, layering images, redeye, text, shapes, retouching
		3.5.2	Create a publication using these advanced editing techniques

## Unit 4: Advanced Desktop Publishing

### Hours: 15

Terminology: Brightness, Columns, Footers, Headers, Index, Master Pages, Portable Document Format (.pdf), Printer marks, Spreads, Table of Contents, Template

CAREER and TECHNICAL SKILLS			
What the Student Should Know		What the Student Should be Able to Demonstrate	
Knowledge		Application	
4.1	Define terminology	4.1.1	Prepare a list of terms with definitions
4.2	Demonstrate advanced desktop publishing techniques	4.2.1	Create formatting styles in a document
		4.2.2	Modify template elements
		4.2.3	Apply a template to a document
4.3	Describe master pages and their uses	4.3.1	Set repetitive elements, i.e. headers, footers, columns, and page numbers
		4.3.2	Apply a master page to a document
4.4	Demonstrate the basic components and layout of a multi-page document	4.4.1	Create a multi-page document using spreads, i.e. recipe books, magazines, children's books, etc.
		4.4.2	Create a table of contents
		4.4.3	Create an index
4.5	Integrate page layout design with photo editing software	4.5.1	Convert a document to a .pdf
		4.5.2	Print a document identifying printer marks

## Unit 5: College/Career Capstone

### Hours: 5

Terminology: Resume

<b>CAREER and TECHNICAL SKILLS</b>			
What the Student Should Know		What the Student Should be Able to Demonstrate	
<b>Knowledge</b>		<b>Application</b>	
5.1	Define terminology	5.1.1	Prepare a list of terms with definitions
5.2	Identify the basic components of developing a resume	5.2.1	Critique and analyze the different types of resumes
		5.2.2	Prepare and create a resume for entry into the workforce
5.3	Integrate the elements of desktop publishing into a project for career and college readiness	5.3.1	Create various publications incorporating the elements of desktop publishing that demonstrates mastery of student learning; i.e., corporate identity packet (logo, letterhead, business card, etc.) or student portfolio (examples of newsletters, brochures, etc.)

# Glossary

## Unit 1: Hardware/Software & Storage Media

1. Bluetooth – wireless technology to transfer data
2. Burner – a CD or DVD writer; can be internal or external
3. Cloud computing – use of web services to perform functions that were traditionally performed with software on an individual computer, i.e. Flickr, Picasa, Google Docs, Picnik)
4. Compact disk (CD) – an optical storage medium made of molded polymer for electronically recording, storing, and playing back audio, video, text, and other information in digital form; also CD-ROM, CD-R, CD-RW
5. Digital Video Disk (DVD) – an optical disk with a capacity of 4.7 Gb or more that can hold a full-length commercial movie; also DVD-ROM, DVD-D+/-R, DVD+/-RW, Blu ray
6. Drawing software – program used to create vector graphics; provides for freehand as well as geometric shapes
7. Flash drive – a plug-and-play portable storage device that uses flash memory and is lightweight enough to attach to a key chain; also known as a pen drive, keychain drive, thumb drive, jump drive
8. Flash memory – sometimes called "flash ram"; is solid-state memory that can be erased and reprogrammed; gets its name because the microchip is organized so that a section of memory cells are erased in a single action or "flash"
9. Gigabyte (GB) – a unit of storage measuring roughly one billion bytes
10. Image editing software – software designed to edit, manipulate or modify digital photographs
11. Kiosk – a free-standing electronic system that allows transactions or provides information, such as DVD Rental, ATM, gift registry, photo development, etc.
12. Megabyte (MB) – a unit of storage measuring roughly one million bytes
13. Optical storage – storage device that records data by burning microscopic holes in the surface of the disk with a laser
14. Painting software – programs used to create bitmap images; useful in creating original art because they provide the tools used by artists (such as brushes and pens)
15. Point-and-shoot cameras – a still camera used for simple operations
16. Scanner – an input device that converts hard copy, such as photos and documents, to a digital copy
17. SLR (a single lens reflex) camera – camera that has a detachable lens
18. Terabyte (TB) – a unit of storage measuring roughly one trillion bytes
19. Universal Serial Bus (USB) port – a connection port used to connect various outside devices, i.e. flash drives, USB cables

## Unit 2: Photography

1. Aperture – device that controls the quantity of light that passes through the lens
2. Card readers – input device that reads memory cards
3. Close up – framing technique that captures the head and shoulders of the subject
4. Digital zoom – zoom takes a portion of the image and enlarges it electronically; the image quality is reduced since digital zoom enlarges the same set of pixels without adding detail
5. Extreme close-up – a framing technique that cuts off top of head and chin of subject
6. Flash – a device used in photography producing a flash of artificial light
7. Image stabilization – vibration reduction and anti shake
8. Internal memory – built-in storage
9. LCD screens – allows user to see what the image will look like
10. Long shot – a framing technique used capture the environment and full body of subject
11. Macro zoom – zoom that allows you to take extreme close-ups
12. Megapixel – one million pixels; describes the size of the images captured by a camera
13. Memory card – removable storage device used in digital cameras (such as SD cards, compact flash cards)
14. Mid shot – a framing technique that captures subject from the waist up
15. Mode dial – used to change camera functions
16. Preview mode – used to review images taken
17. Optical zoom – zoom that physically increases the length of the lens, essentially creating a magnifying glass; produces a higher-quality image
18. RAW – is a camera file format that acts like a negative, allowing you to make significant changes to the original image
19. Resolution – the quality or sharpness of an image, usually measured in pixels per inch; the more pixels, the higher the resolution
20. Rule of thirds – divides the frame into 9 sections, points of interest should occur at 1/3 or 2/3
21. Shutter speed – the amount of time that the shutter is open

22. Tripod – a three-legged object used as support for a camera
23. Universal Serial Bus Cable – used to transfer images from a camera to a computer
24. White balance – a feature on digital cameras used to accurately balance color

## Unit 3: Graphics Editing

1. Adobe Illustrator (AI) – vector image format created in the Adobe Illustrator
2. Bitmap – an image composed of pixels with a fixed resolution
3. Bitmap (.bmp) – an uncompressed bitmap file format that is very large and is not appropriate for the web
4. Brightness – the measure of relative lightness or darkness of a color (measured as a percentage from 0% [black] to 100% [white])
5. Compression – encoding data to take up less storage space and less bandwidth for transmission
6. Feathering – special formatting style that blurs the edge of an image
7. Graphics Interchange Format (.gif) – compressed bitmap file format (lossless) that supports only 256 colors and is appropriate for the web; supports transparency and animation
8. Joint Photographer Experts Group (.jpg) – a compressed bitmap file format (lossy) that is preferred for photographs; supports 16 million colors and is appropriate for the web; does not support transparency or animation
9. Layering – a feature that allows you to place one image on top of another and edit each independently
10. Lossless – a compression formula that reduces the file size without data loss
11. Lossy – a compression formula that reduces the file size by removing certain pixels
12. Masking – hiding part of a layer so that you can manipulate only the visible parts of the layer
13. Portable Network Graphics (.png) – compressed bitmap file format (lossless) similar to the gif format; it is not limited to 256 colors, is appropriate for the web, and supports transparency
14. Rasterize – converting vector objects in an image to raster (bitmap) content
15. Red eye reduction – a photo editing technique to remove the red from the eye
16. Shape – a design element that includes geometric, natural, or abstract shapes.
17. Special effects – the effect or impression used to produce materials that cannot be achieved by normal techniques
18. Tagged Image File (.tif) – uncompressed bitmap file format that supports 16 million colors; supports transparency, file size is very large, and is not appropriate for the web
19. Text – a multimedia element consisting of alphanumeric characters
20. Transparency – a visual quality in which a distant image or element can be seen through a nearer one

21. Unzip – decompressing a zipped file
22. Vector – an image created by using a series of mathematically defined lines and curves rather than pixels, making the image easier to rescale; also called draw-type graphics
23. Windows Metafile (.wmf) – Microsoft's vector file format; most Microsoft clip art are metafiles and can be edited
24. Zip – compressing files to reduce file size

## Unit 4: Advanced Desktop Publishing

1. Columns – one of two or more vertical sections of typed lines lying side by side on a page and separated by a rule or a blank space
2. Footers – repetitive text that appears at the bottom of the pages in a publication
3. Headers – identifying text that appears at the top of pages in a publication
4. Index – an alphabetical listing of key words, phrases, or topics that includes the page numbers of which those items are found within a publication
5. Master pages – pages that contain reoccurring items such as page numbers as well as other design elements
6. Portable Document Format (.pdf) – an extension for Adobe Acrobat Reader files
7. Printer marks – marks created by a professional printer to identify where the page will be trimmed
8. Spreads – facing pages
9. Table of contents – a listing of the major entries in a publication
10. Template – a publication that can be used as a "model" for the creation of new documents

## Unit 5: College/Career Capstone

1. Resume – a summary of your academic and work history