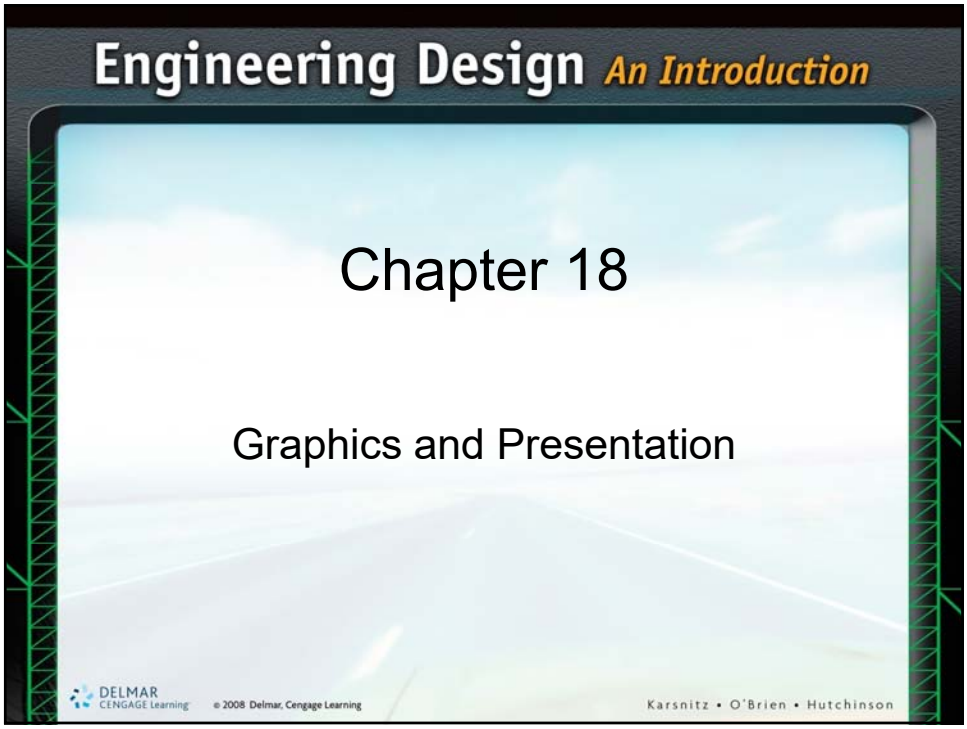
Engineering Design An Introduction
Chapter 18
Graphics and Presentation
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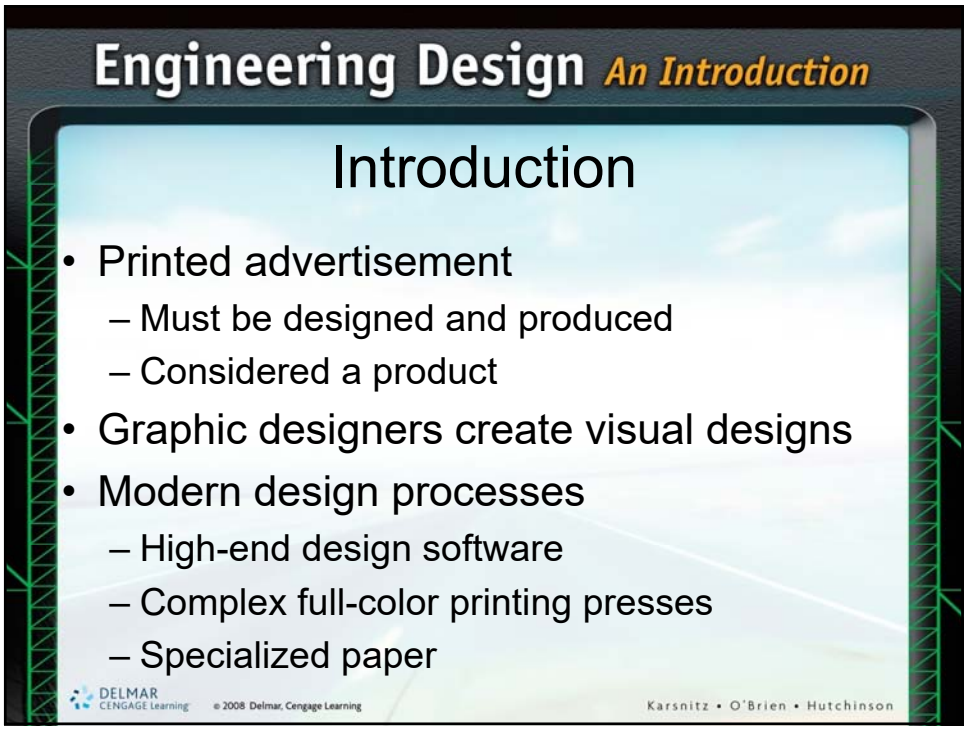
Engineering Design An Introduction
Introduction
• Printed advertisement
– Must be designed and produced
– Considered a product
• Graphic designers create visual designs
• Modern design processes
– High-end design software
– Complex full-color printing presses
– Specialized paper
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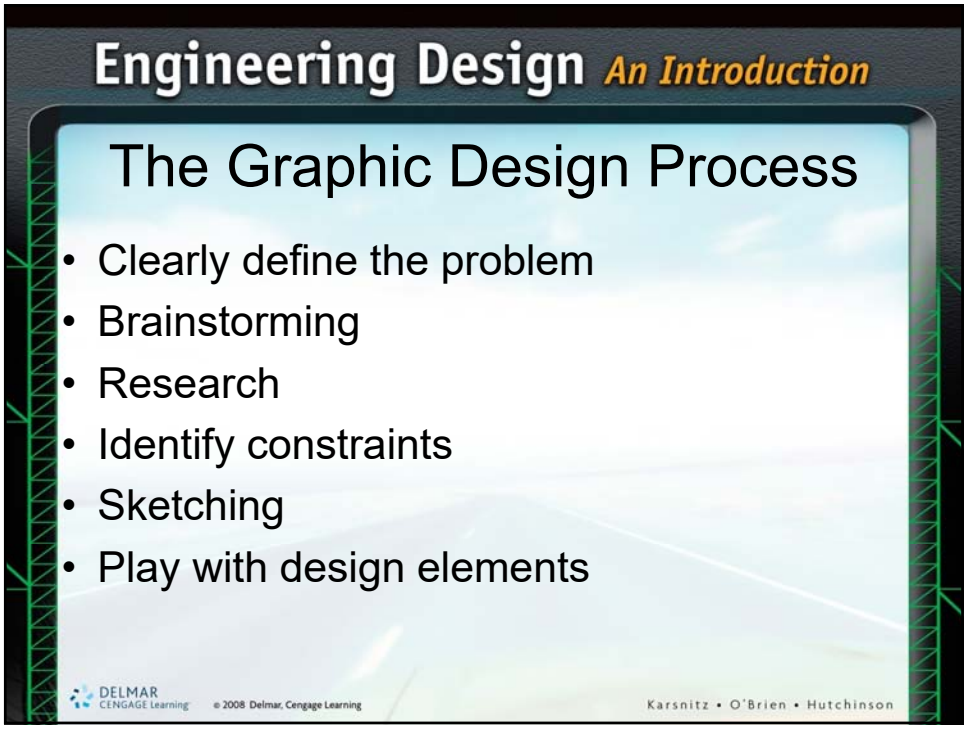
Engineering Design An Introduction
The Graphic Design Process
• Clearly define the problem
• Brainstorming
• Research
• Identify constraints
• Sketching
• Play with design elements
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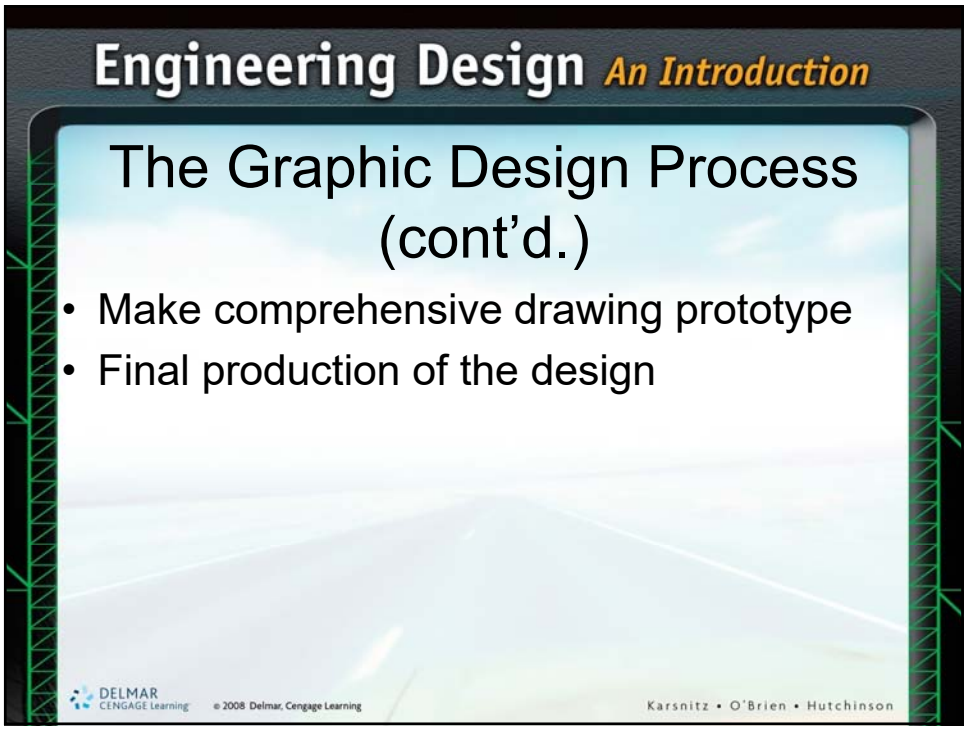
Engineering Design An Introduction
The Graphic Design Process (cont'd.)
• Make comprehensive drawing prototype
• Final production of the design
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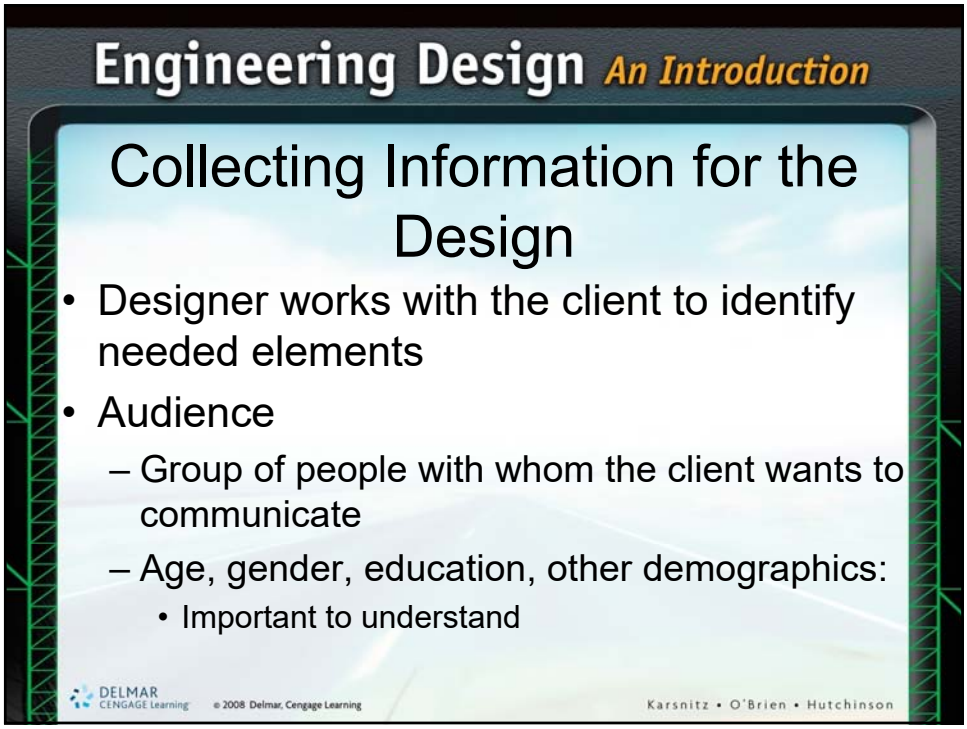
Engineering Design An Introduction
Collecting Information for the Design
• Designer works with the client to identify needed elements
• Audience
– Group of people with whom the client wants to communicate
– Age, gender, education, other demographics:
• Important to understand
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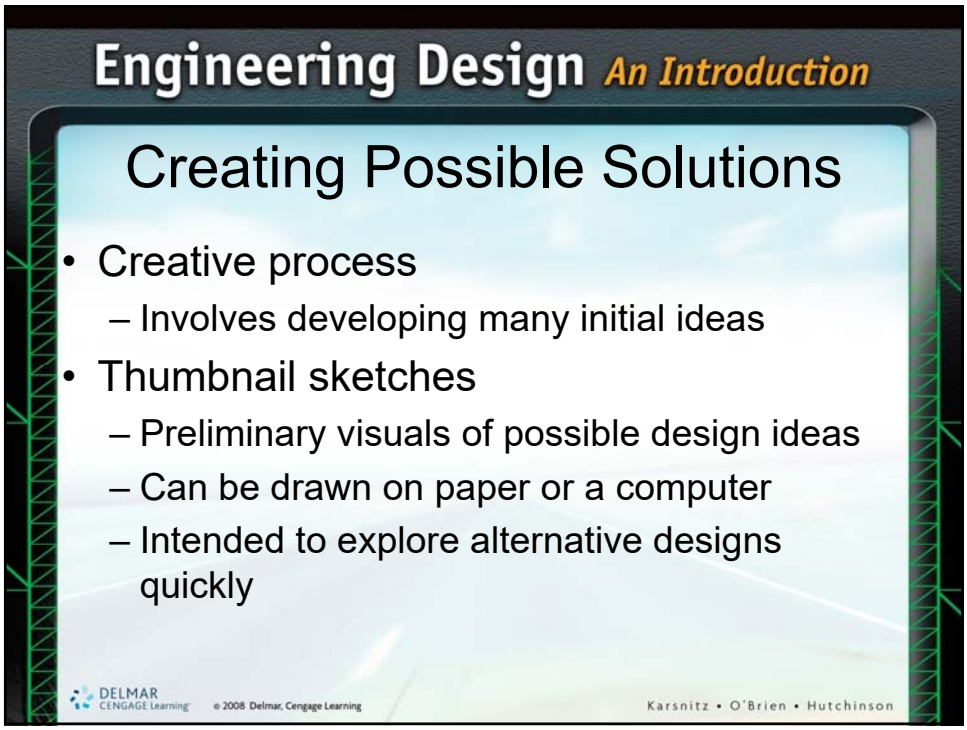
Engineering Design An Introduction
Creating Possible Solutions
• Creative process
– Involves developing many initial ideas
• Thumbnail sketches
– Preliminary visuals of possible design ideas
– Can be drawn on paper or a computer
– Intended to explore alternative designs quickly
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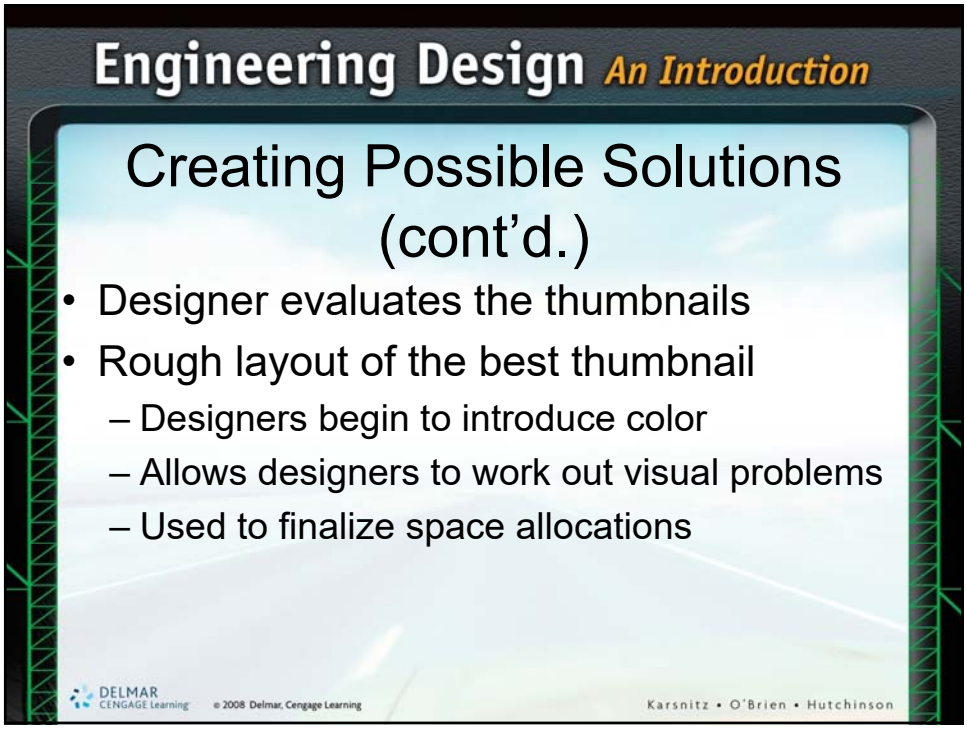
Engineering Design An Introduction
Creating Possible Solutions (cont'd.)
• Designer evaluates the thumbnails
• Rough layout of the best thumbnail
– Designers begin to introduce color
– Allows designers to work out visual problems
– Used to finalize space allocations
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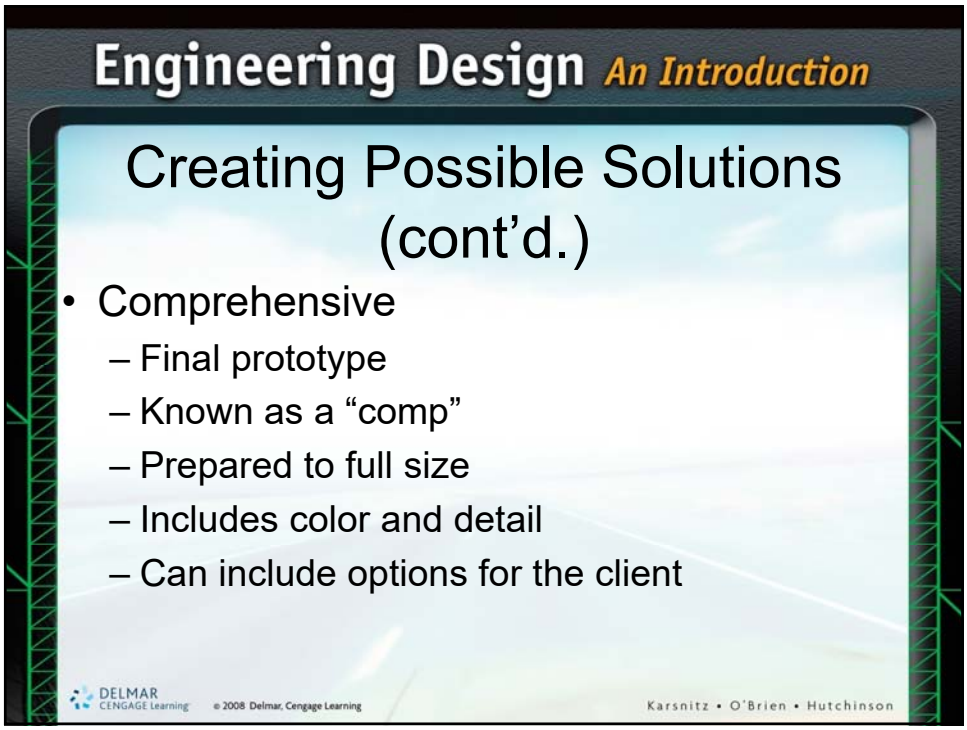
Engineering Design An Introduction
Creating Possible Solutions (cont'd.)
• Comprehensive
– Final prototype
– Known as a "comp"
– Prepared to full size
– Includes color and detail
– Can include options for the client
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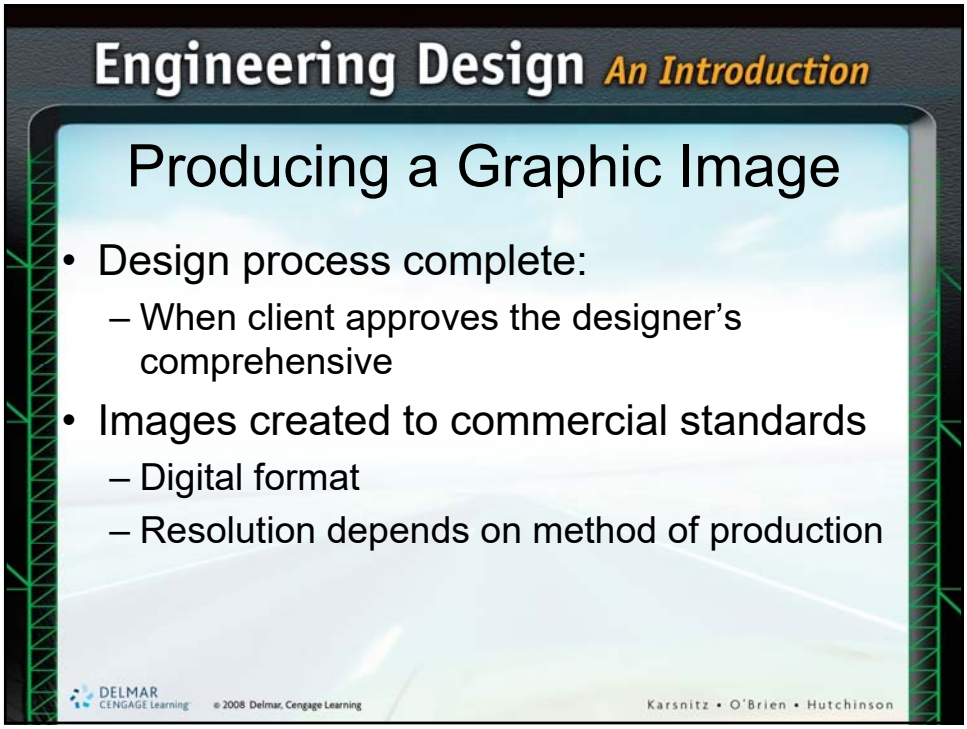
Engineering Design An Introduction
Producing a Graphic Image
• Design process complete:
– When client approves the designer's comprehensive
• Images created to commercial standards
– Digital format
– Resolution depends on method of production
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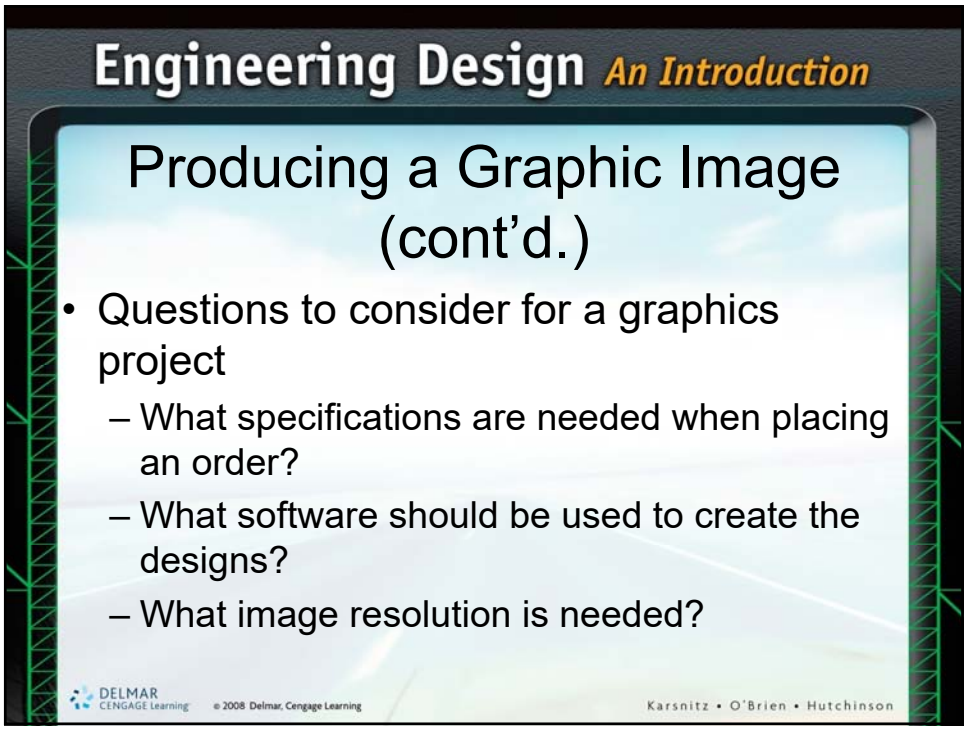
Engineering Design An Introduction
Producing a Graphic Image (cont'd.)
• Questions to consider for a graphics project
– What specifications are needed when placing an order?
– What software should be used to create the designs?
– What image resolution is needed?
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Product	Application	Resolution
Commercial Printing	Full-Color	300dpi or higher
Photograph	Standard Print	
Website	Web	72dpi
Video	S-VHS	400 x 480ppi
Television	High Definition (HD)	1900 x 1080ppi
Monitor	CAD, graphic design and video games 19"	1600 x 1200ppi (UXGA – Ultra-eXtended) 1280 x 1024ppi (SXGA – Super eXtended)
Canon S1 3.2 Mega pixel	General Photography	2048 x 1536ppi
Nikon D2K 12.2 Mega pixel	Professional	4288 x 2848ppi
HP Laser Printer	Industrial/Commercial Color Printer	4800 x 1200dpi

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Figure 18-9: This chart shows the dpi and ppi for commonly used graphic products.

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Engineering Design An Introduction

Producing a Graphic Image (cont'd.)

- Difference between RGB and CMYK color
  - RGB uses the additive color principle
  - CMYK uses the subtractive color principle
- When designing for four color printing:
  - Best to convert color files to CMYK

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Engineering Design *An Introduction*

Producing a Graphic Image (cont'd.)

- Color matching : a universal problem
  - Color seen on computer is different from that on printed page
- Pantone color systems assist designers in writing color specifications
- Consider product distribution requirements
  - Mailing standards

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Engineering Design *An Introduction*

Producing a Graphic Image (cont'd.)

- Legal considerations
  - Intellectual property
  - Copyright laws
- Fair-use doctrine
  - Allows copying for use in teaching, research, news reporting, or criticism
  - Must give credit to author or creator

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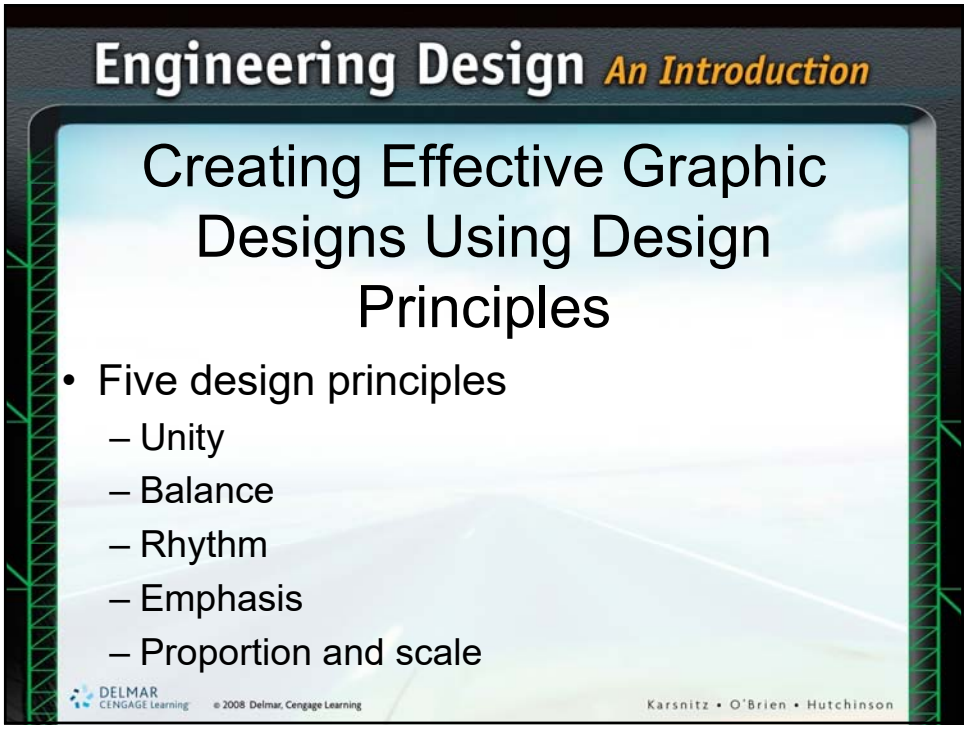
Engineering Design An Introduction
Creating Effective Graphic Designs Using Design Principles
• Five design principles
– Unity
– Balance
– Rhythm
– Emphasis
– Proportion and scale
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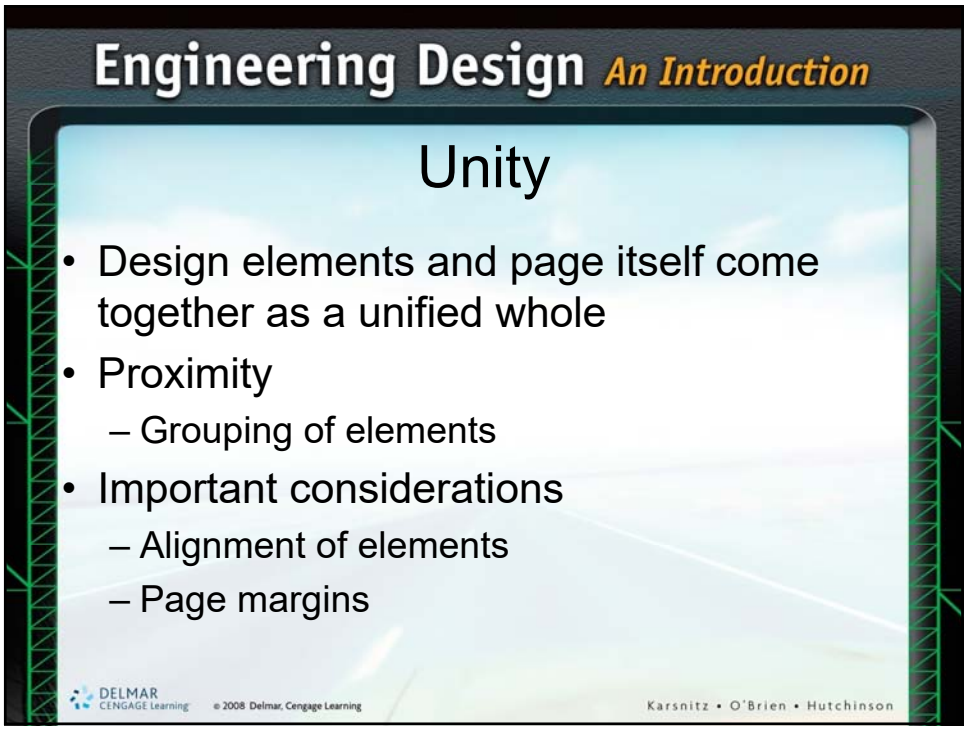
Engineering Design An Introduction
Unity
• Design elements and page itself come together as a unified whole
• Proximity
– Grouping of elements
• Important considerations
– Alignment of elements
– Page margins
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Balance

- Visual and physical equilibrium
- Can be symmetrical or asymmetrical
- Formal balance
  - Symmetrical
  - Elements placed around a vertical or horizontal centerline

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Engineering Design *An Introduction*

Figure 18-19: (a) Formal balanced designs.

Figure 18-19: (b) Informal balanced designs.

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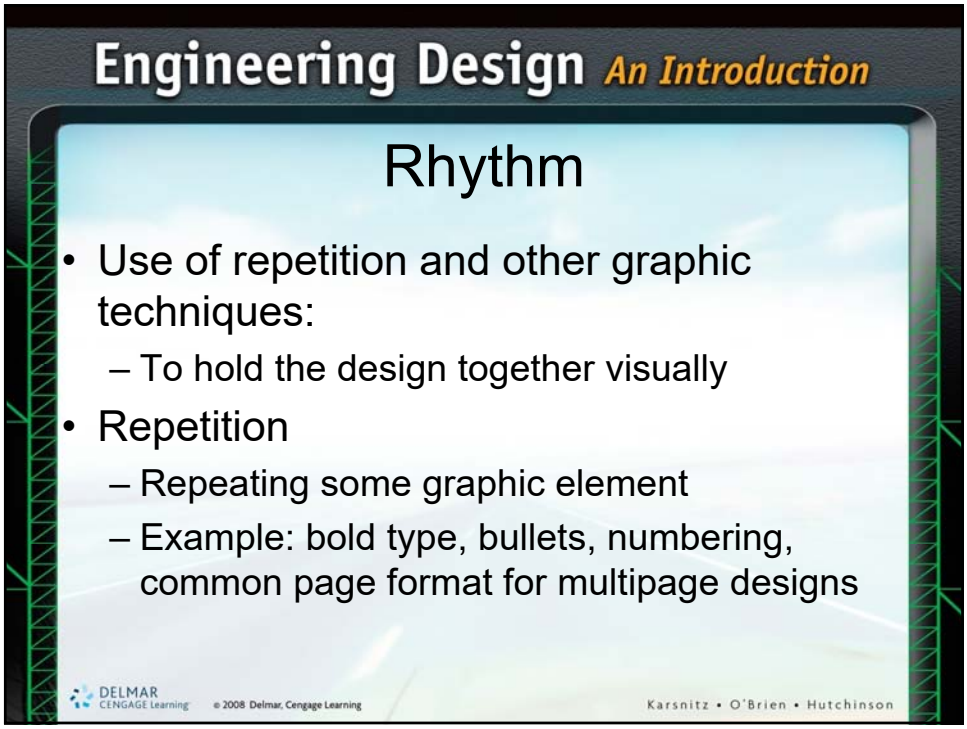
Engineering Design An Introduction
Rhythm
• Use of repetition and other graphic techniques:
– To hold the design together visually
• Repetition
– Repeating some graphic element
– Example: bold type, bullets, numbering, common page format for multipage designs
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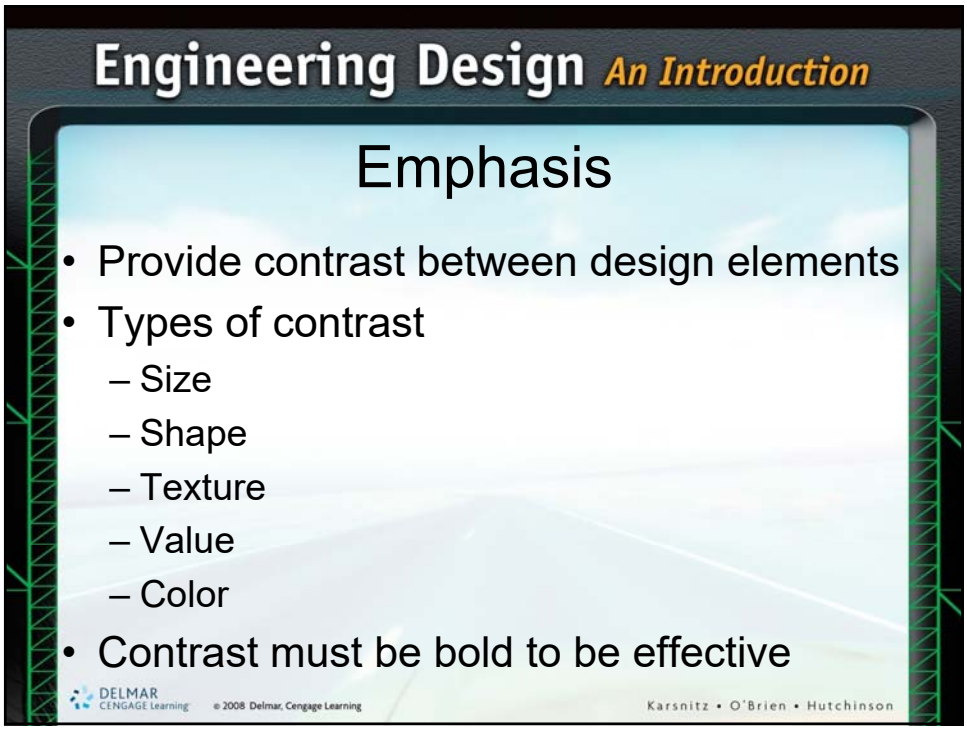
Engineering Design An Introduction
Emphasis
• Provide contrast between design elements
• Types of contrast
– Size
– Shape
– Texture
– Value
– Color
• Contrast must be bold to be effective
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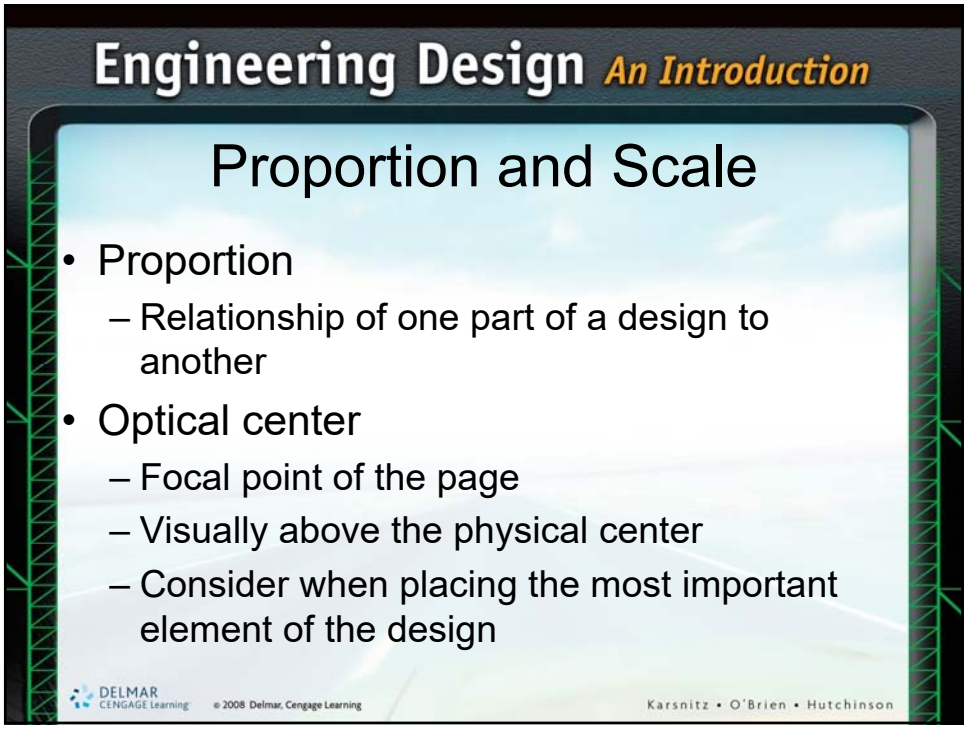
Engineering Design An Introduction
Proportion and Scale
• Proportion
– Relationship of one part of a design to another
• Optical center
– Focal point of the page
– Visually above the physical center
– Consider when placing the most important element of the design
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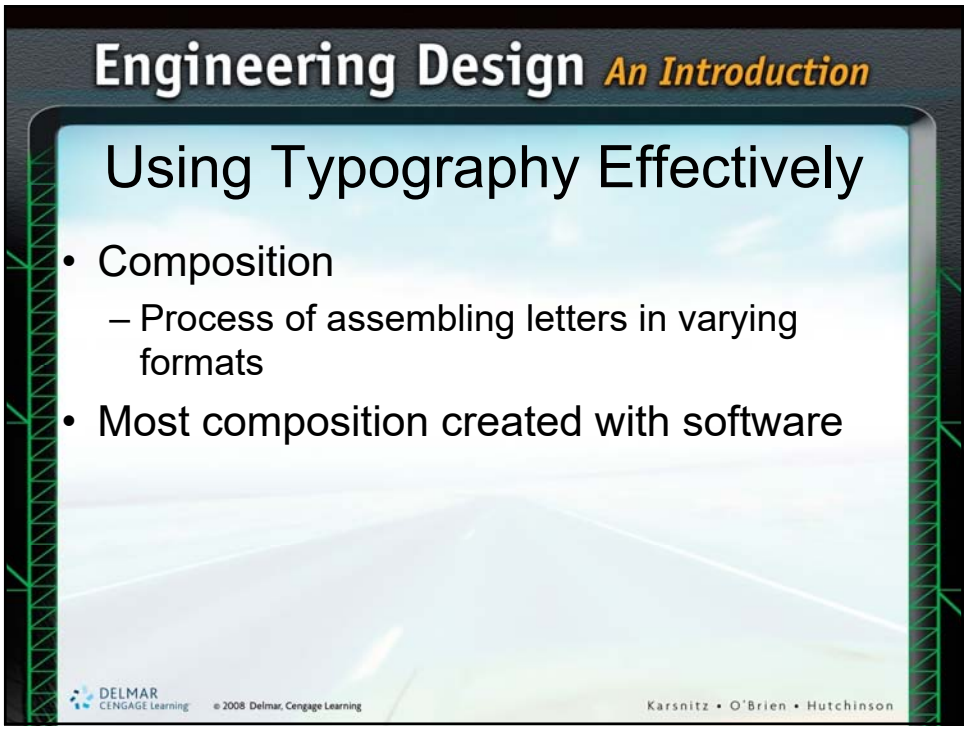
Engineering Design An Introduction
Using Typography Effectively
• Composition
– Process of assembling letters in varying formats
• Most composition created with software
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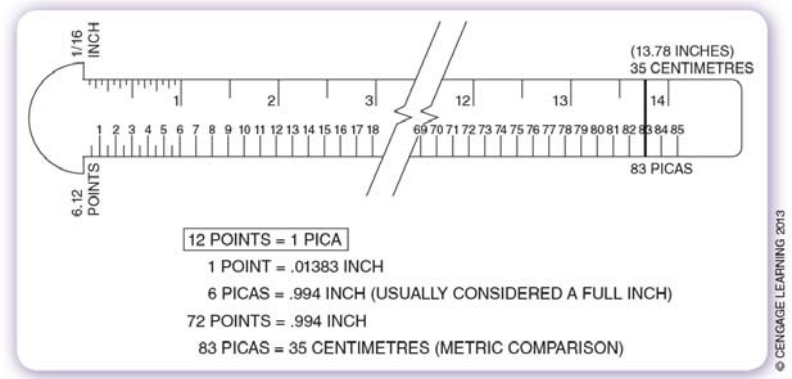

Figure 18-27: Printer's measurements (points and picas).

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Engineering Design An Introduction

Understanding Type Specifications

- Type size
  - Measured in points
- Line spacing
  - Vertical distance between two lines
  - Measured from baseline to baseline
- Kerning
  - Adjusting letter spacing for visual purposes

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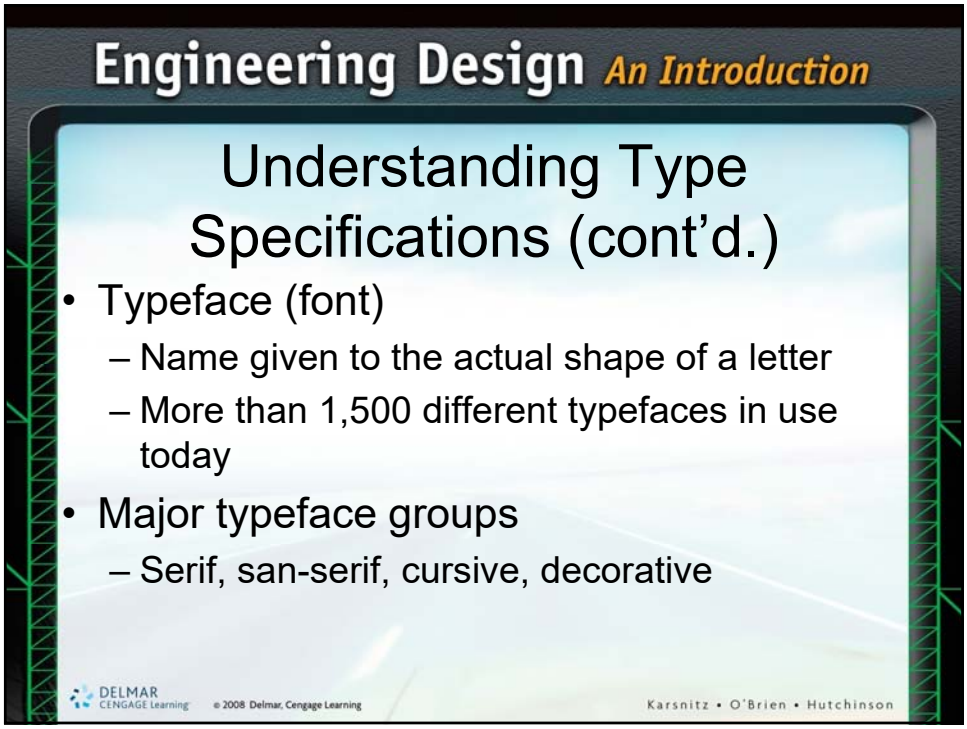
Engineering Design An Introduction
Understanding Type Specifications (cont'd.)
• Typeface (font)
– Name given to the actual shape of a letter
– More than 1,500 different typefaces in use today
• Major typeface groups
– Serif, san-serif, cursive, decorative
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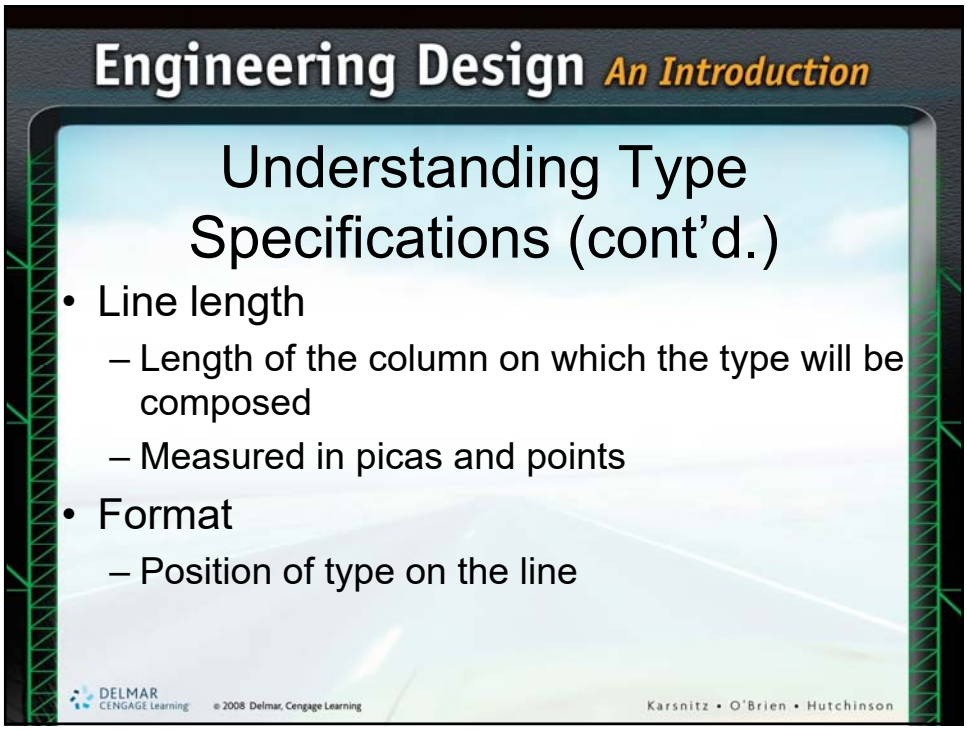
Engineering Design An Introduction
Understanding Type Specifications (cont'd.)
• Line length
– Length of the column on which the type will be composed
– Measured in picas and points
• Format
– Position of type on the line
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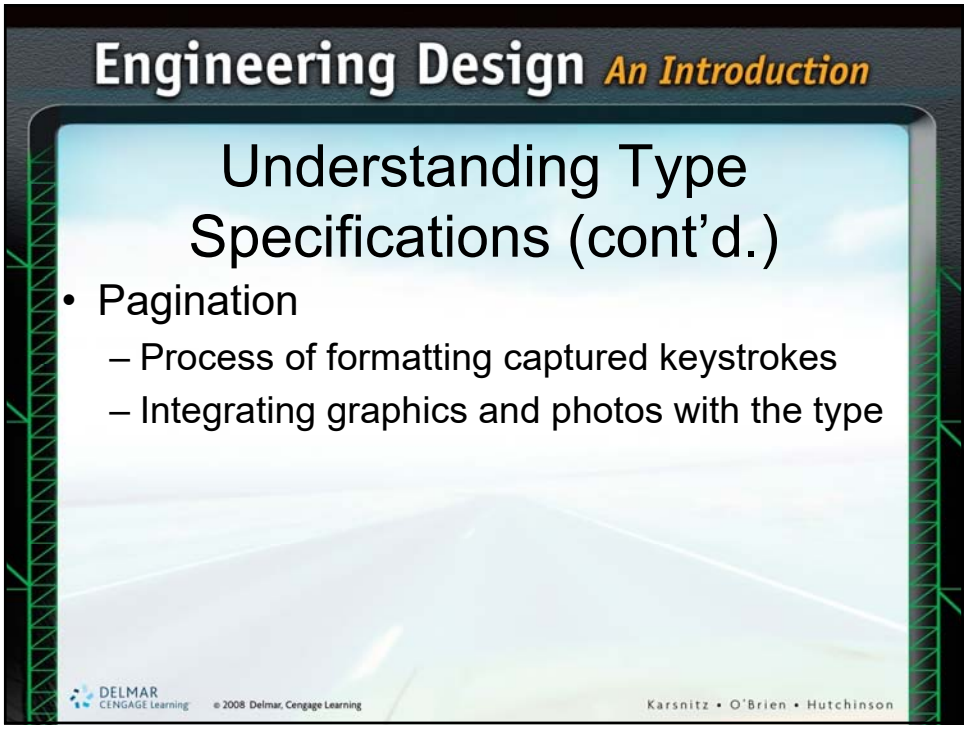
Engineering Design An Introduction
Understanding Type Specifications (cont'd.)
• Pagination
– Process of formatting captured keystrokes
– Integrating graphics and photos with the type
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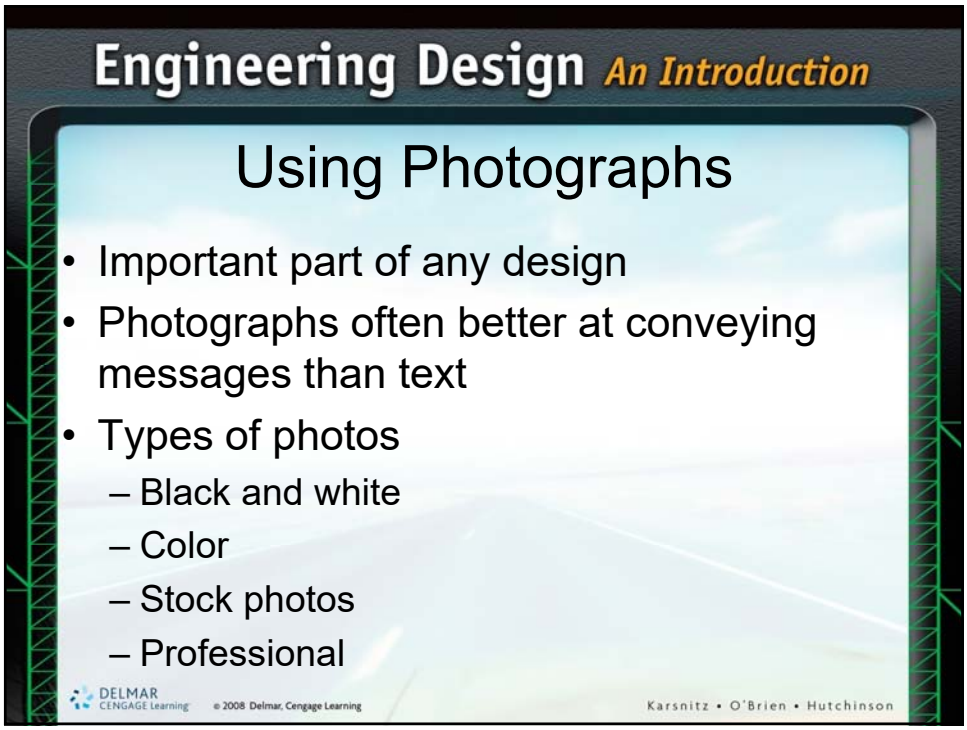
Engineering Design An Introduction
Using Photographs
• Important part of any design
• Photographs often better at conveying messages than text
• Types of photos
– Black and white
– Color
– Stock photos
– Professional
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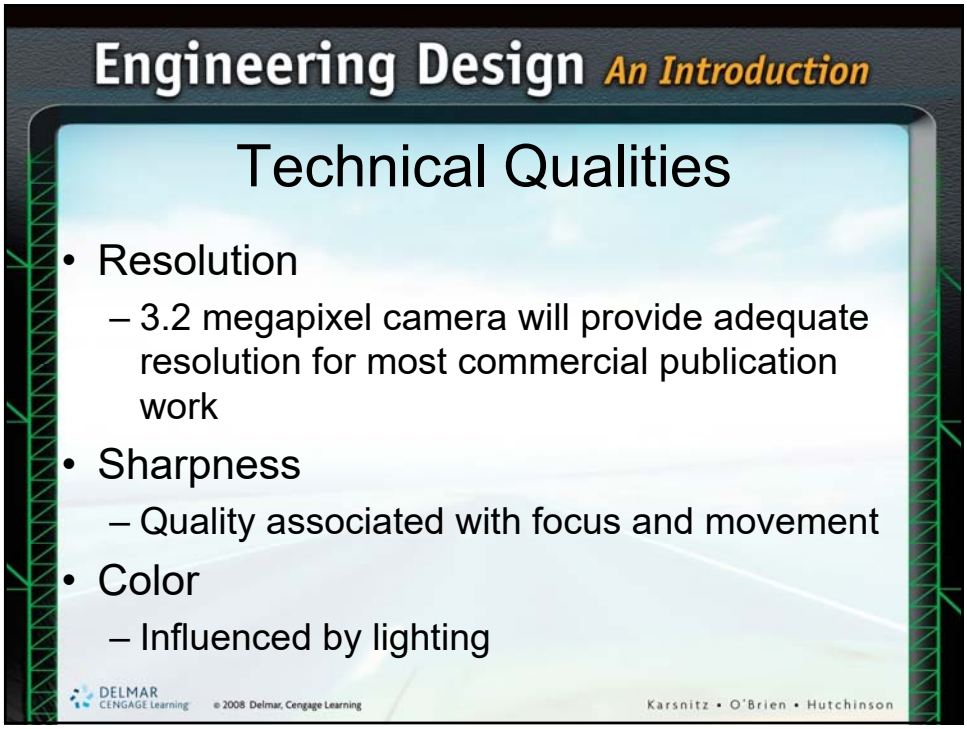
Engineering Design An Introduction
Technical Qualities
• Resolution
– 3.2 megapixel camera will provide adequate resolution for most commercial publication work
• Sharpness
– Quality associated with focus and movement
• Color
– Influenced by lighting
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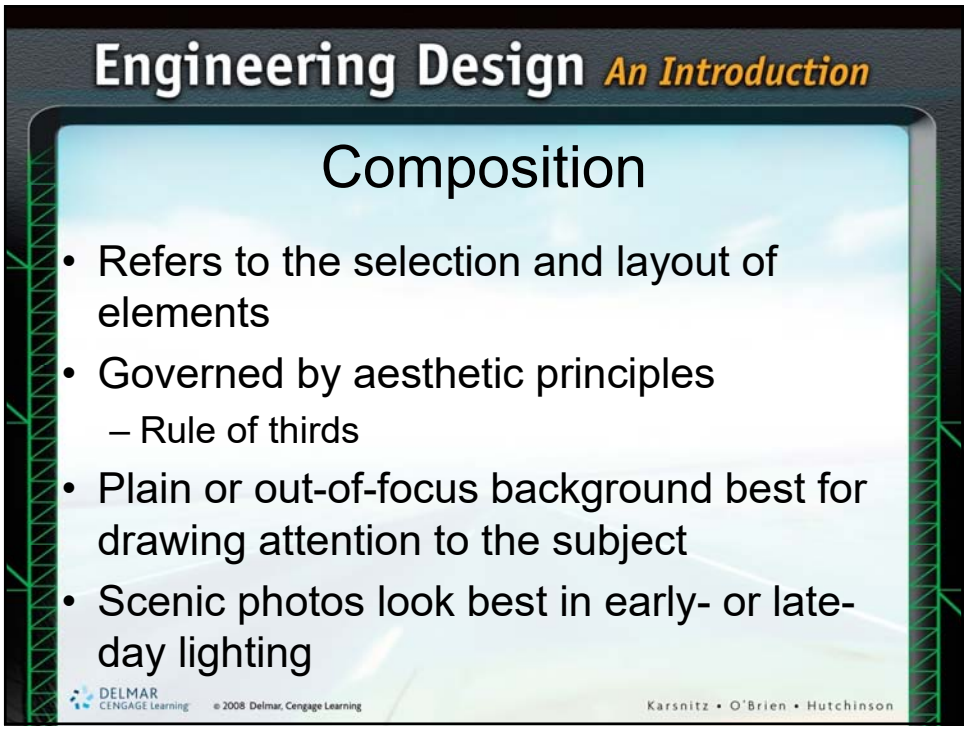
Engineering Design An Introduction
Composition
• Refers to the selection and layout of elements
• Governed by aesthetic principles
– Rule of thirds
• Plain or out-of-focus background best for drawing attention to the subject
• Scenic photos look best in early- or late-day lighting
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Engineering Design *An Introduction*

Editing Photographs for Design and Production

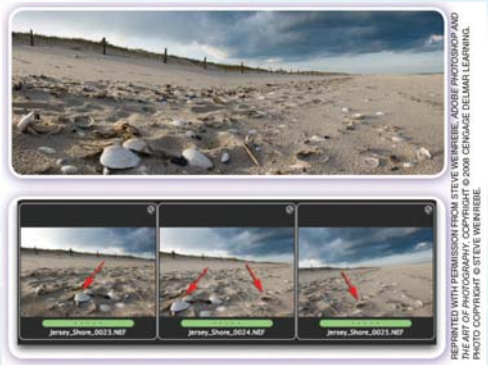

Figure 18-40: This panoramic photograph was created in Photoshop by stitching together three individual photographs.

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Engineering Design *An Introduction*

Using Illustrations, Symbols, and Logos

- Symbols and logos
  - Designed to be recognized and understood

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Figure 18-41: Common symbols.

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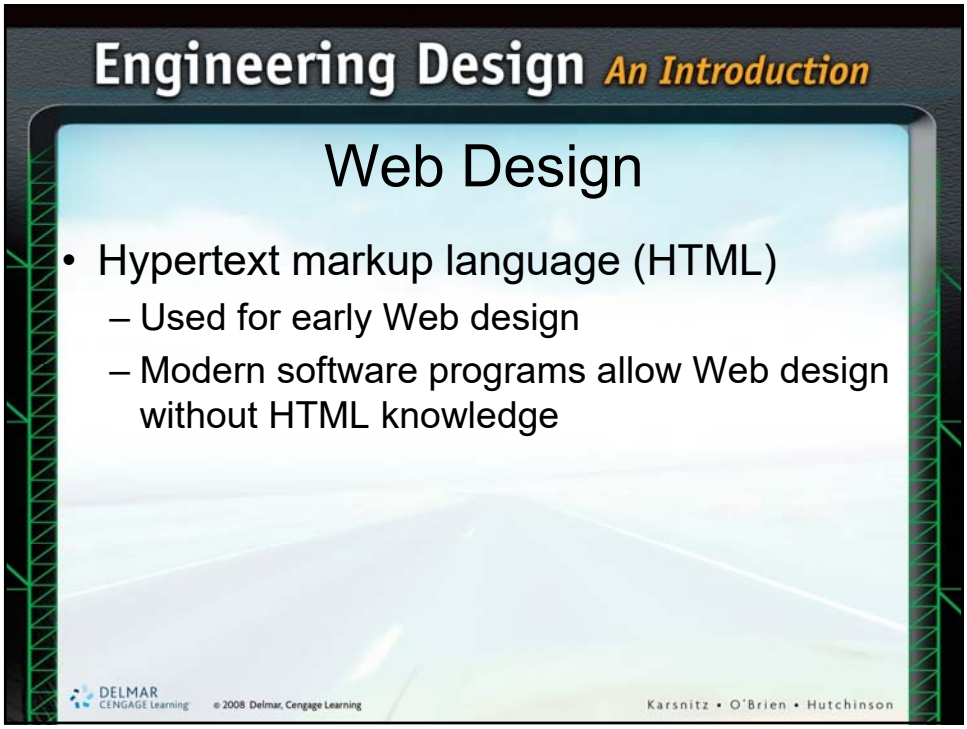
Engineering Design An Introduction
Web Design
• Hypertext markup language (HTML)
– Used for early Web design
– Modern software programs allow Web design without HTML knowledge
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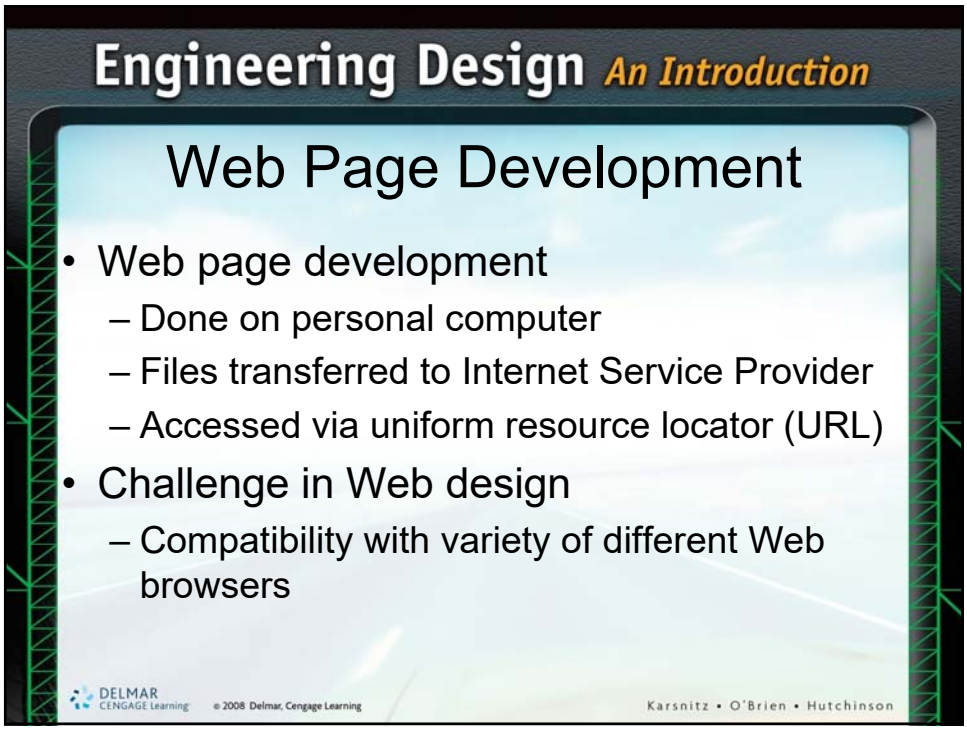
Engineering Design An Introduction
Web Page Development
• Web page development
– Done on personal computer
– Files transferred to Internet Service Provider
– Accessed via uniform resource locator (URL)
• Challenge in Web design
– Compatibility with variety of different Web browsers
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Engineering Design *An Introduction*

Brochure Design

- Multipage format
- Design principles still apply
- Consistent look from page to page
  - Still able to vary the look

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Engineering Design *An Introduction*

Figure 18-44: Development of multipage design using a multicolumn and grid structure. Page layout from @ issue. Design by Kit Hinrichs, Pentagram.

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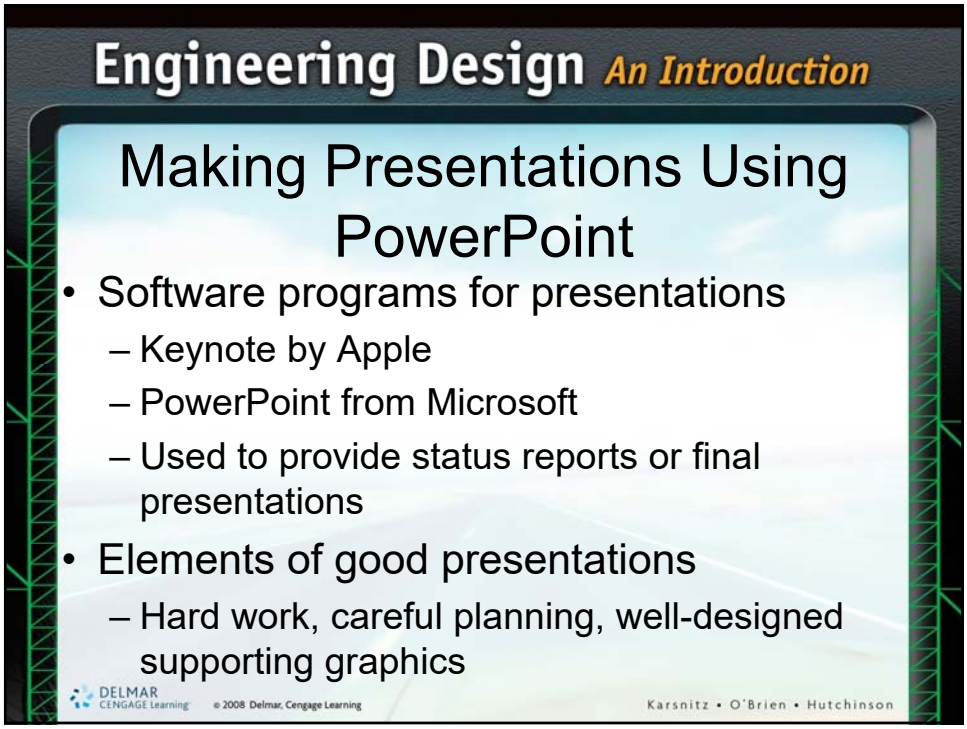
Engineering Design An Introduction
Making Presentations Using PowerPoint
• Software programs for presentations
– Keynote by Apple
– PowerPoint from Microsoft
– Used to provide status reports or final presentations
• Elements of good presentations
– Hard work, careful planning, well-designed supporting graphics
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Engineering Design An Introduction
Planning a Presentation
• Gather information about the presentation
– Who will be attending?
– What are the expectations?
– When is the presentation planned?
– Where will you make the presentation?
– Why is the meeting taking place?
• Templates
– Often used for presentations
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