

# Lecture 8: Responsiveness

## Objectives

- recognize the need for responsive web design
- use media queries to apply conditional styles
- build a basic media query
- create flexible responsive layouts
- create responsive navigation schemes
- use responsive images
- build a responsive web design for desktops, tablets, and smartphones

## The Need for Responsive Design

- many device sizes, screen orientations, and resolutions
- legibility and navigation are a challenge
- **breakpoint**: point at which design layouts change in responsive design schemes
  - *content*, not device needs, should dictate the breakpoint value
  - which content is valuable to users on a small device?
- build one basic layout then use style rules targeted to different screen sizes

The main elements of responsive design:

- **CSS media query**: apply styles based on display devices characteristics
- **Flexible images**: images adapt to the parameters of the user's screen size
- **Flexible layouts**: layouts realign elements of your content structure based on display device

We can control style characteristics including:

- adding and removing entire columns
- changing navigation
- stacking columns on top of each other

## Pixels vs EMs

- ems are better than pixels because they are flexible
- 1em == 16px
- breakpoints are best measured in ems

## Using Media Queries to Apply Conditional Styles

- contains both a media type and optional expressions that check conditions called media features
- media features include variables such as width or height of the destination device
- combine multiple media features with the **and** keyword
- **Media Types**: all, braille, embossed, handheld, print, projection, screen, speech, tty, tv

## Setting Viewport Scale

- viewport is equal to the size of the browser window
- viewport on mobile devices is much narrower than a desktop browser window
- include meta tag to set viewport: `<meta name="viewport" content="width=device-width, initial-scale=1.0">`

## Creating Flexible Responsive Layouts

- `display` property can be used to remove or add content
- larger page design takes advantage of screen space, mobile design focuses on user navigation and content access

## Creating Responsive Navigation Screens

- mobile site should offer popular links readily available on the first page
- navigation on small devices is much easier when navigation is direct and accessible

## Using Responsive Images

- set image max-width to a percentage
- set height to auto to maintain aspect ratio when scaled
- set the minimum fixed width if necessary
- wrap text around in image in a responsive column with float

## Summary

- media queries let you apply conditional styles based on different device properties
- responsive web designs let you create one source of content and use style sheets and media queries to adapt the page design to different devices
- design for the needs of the content, not the device
- remove or add content as necessary to provide the best user experience
- use the fewest breakpoints possible and determine the breakpoints by examining how the content behaves at different browser widths