1. Myths about good UX design
   * It’s just cool graphics
   * It’s just common sense
   * Interface can be changed at the end
   * Marketing takes care of understand customer needs
2. Major considerations of UX Design
   * Technology
   * Tasks
   * Humans
   * Organization and social
   * Market force
3. Waterfall vs. iterative design process
   * Waterfall: defined by stages that can only follow the previous
     + Cons: requires getting design right on the first try, can’t retract on process, slow to learn what should be built
   * Iterative design: short cycles of design, prototype, and evaluate
     + Pros: quickly validate assumptions, fail fast, progressive refinements
4. Design: driven by core needs and not exactly implementation methods, as there are many ways to reach the same goal
5. Usability goals: learnable, memorable, flexible, efficient
6. Mindset: designer is not the user
7. Task analysis
   * Choose natural questions
   * Choose a combination of simple and complex real user tasks
8. Fidelity
   * Low-fi: paper prototyping
     + Allow for many ideas exploration
     + Cheap, quick, little resources needed
     + Hard to implement certain functions
   * Med-fi
   * High-fi
     + Narrow in on one design too early
     + Customers might focus on surface level details compared to foundational ones
9. Wizard of Oz: process of faking interactions to do early-stage testing with users
10. Three concepts for a lean startup
    * Value hypothesis: does this product or service really delivery value?
    * Minimal viable product: version of product that works with minimum effort and dev (dropbox)
    * Build-measure-learn
11. User testing
    * Set up, describe overall purpose, ok to quit anytime, demonstrate equipment in room, explain think aloud, explain no help will be provided, describe task and product, begin observation, conclude observation, usre results
    * Greeter, facilitator, computer, observer
    * Ethical considerations: approval by the IRB, avoid distressing the participant, debriefing
    * Evaluating results: priorities by most important and frequent
12. Slips vs. mistakes: slips are right goal, wrong action, whereas mistakes are wrong action
    * Slips: typo of “bib” instead of “bob”
    * Mode error: accidentally hit caps lock and input BOB instead of “bob”
      + User performs an action appropriate to one situation in another situation > same input, but different outputs
      + User has to keep track of mode changes
      + Mode escape is not always clear
    * Mistake: not knowing bob’s name and writing “jim”
13. Designing for slips
    * Prevent error: selection, physical constraints
    * Improve detection and responses
14. Heuristic evaluation: cheap and fast method for finding problems by comparing screen against a list of heuristics to see which interfaces do not comply
    * Jakob Nielsen
      + 3-5 because one can’t find all, more can’t find anymore
      + Independently check
      + Aggregate after
    * Pre-eval, evaluation, severity rating, debriefing
    * Some
      + Visibility of system status: keep users informed on what’s going on
      + Match between system and real world: follow conventions
      + User control and freedom: easy to fix mistakes
      + Consistency and standards
      + Recognition over recall
    * Fast, but not as accurate as user testing, alternate
15. Design specs: documentation of design through design user experience, detail user interface, offer user rationale
    * Problem, mental model and workflow, challenges and considerations, today, site map, details, sequence of event
    * Helps think of issues, get design team on same page, reference
    * Not tech specification of business plan
    * Include change log, legend, key screens
16. Prototyping
    * Physical devices and privacy: use light to indicate when visual sensor is recording
    * Motion (frosted mirror, lights that follow, faster spinning fan), data transfer, audio
17. Diary studies: understanding behavior over a period of time
    * Interval, signal, event, retrospective
    * More in depth
    * Low compliance, based on recall
18. Parallel vs. serial approach
    * Parallel is better comparison, more indv exploration, more feature sharing, increase in group rapport more conversational turns
19. A/B Testing: comparing versions of a web page to see which ones does better
    * Cons: premature optimization, no insights to why, need people
20. User interface design patterns: communicate design problems and good solutions
    * Pros: known concept among designers and users, tested designs, level of abstraction, inspire find usability problem
    * Cons: applying old patterns to emerging tech, lack of creativity
    * Search, my account, shopping cart
    * Vs. guidelines: more specific and provides solutions to problems
    * Jason’s Design of Sites: pattern name and number, example, background, sample statement, forces, solution, solution diagram, related pattern
21. Document Object Model (DOM): programs access and modify HTML through tree
22. Web
    * Use highly reusable interactive components, such as widgets
      + Object based organization
      + Each has its own behaviors and states: draws, inputs, states
      + Loose coupling, easy to modify, easy to reuse
    * Component tree
    * MVC
      + Model (HTML): related data
      + View (CSS): output
      + Controller (JavaScript): input
23. Principles and patterns of the web
    * Separation of content: don’t intermingle things that don’t need to be
      + CSS and HTML, MVC
    * Loose coupling: components should depend on other components minimally
      + Should not know each other’s internal workings
      + Should only interact through well-defined APIs
    * High cohesion: simple but sensibile organization
24. Hypertext: text displayed with references (hyperlinks) to other texts that can be instantly accessed
    * Doug Engelbart: NLS, hypertext, mosue
25. Web browser (CSS/JavaScript) > Internet (URL/HTML) > Server (PHP, MySQL, Apache, Linux)
26. Content Management Systems: easier to update individual pages
27. Content Distribution Network: alleviate traffic going through same network
28. JSON (in JavaScript) vs. XML (in HTML)
    * Two ways of representing data on the web
29. Color:
    * RGB: technology-centered
    * HSV: people centered
      + Hue: colors
      + Saturation: color purity
      + Value: brightness
    * CMYK: printing centered
      + Cyan, magenta, yellow, black
30. Human visual system
    * Light passes through lens and is focused on retina
    * Rods
      + Senses intensity of shades of gray
      + Night vision and perceiving movement
      + Located in large quantities at edge of retina
    * Cones
      + Sense colors
      + Gathered at center to allow for higher focus
31. 5 design tips
    * Don’t rely on blue for small objects: more photo pigments for red
    * Blue does not work as well on older users: lenses yellow
    * Minimize saturated color: more work to readjust
    * Don’t rely only on hue as cue: shape, words
    * Design UI in grayscale first, or test in grayscale
32. Color deficiency
    * Different photo pigment response: reduce capability to discern small color difference
    * Red-green deficiency
33. Fitt’s Law: intuitively, things that are closer and/or bigger are faster and easier to hit, and vice versa
    * Four ways to beat
      + Decrease distance
      + Increase size
      + Do both (pie menu)
      + Avoid pointing task
      + Examples: keyboard shortcuts, snapping, bubble cursor, marking menu, magic lens, shapewriter
34. Gulfs
    * Evaluation: gap between users’ understanding of system and actual system state
    * Execution: gap between user desires and how to do it
35. Mental models: describes how a person thinks something works (approximations)
    * Make map to users’ model
    * Make map to actual system
    * 3 different mental models
      + Design: how you intend system to work
      + System: implementation
      + User: how users think it works
    * Affordances: relationship between user and object, signifiers: visual cue
      + Knurling for mouse to drag
      + Make sure interactive GUIs have standard affordances
36. Feedback
    * Humans can perceive discrete flash of up to <20ms
    * 1-2 seconds good response, 5 sec need help, 10-15 sec bad response tie
      + Memory decay effects, need progress meter, manipulate user expectation
    * Feedforward: mouse over, label on button
    * Short term memory 7 +- 2
    * Stroop effect: interference of color with words > tend to lead to slips
37. Visual grouping/separation
    * Proximity, similarity, connected
    * Shape, color, size
38. Change blindness to changes over time, distractions, discontinuity
39. Metaphor
40. Skeuomorphic interfaces: derivative object that retains ornamental attributes from original device