Please answer the following 20 questions — 5 points each, scaled to 25% of the course grade.

1. Give two payoffs for understanding users.
   1) Avoid liars  
   2) more efficient systems

2. Expand any 5 of the following acronyms:  
   (more than 5 correct = 5, wrong ones count negative)  
   UCD/HCD - User Centered Design  
   PQ4R  
   SDT - Signal Detection theory  
   WM  
   LTM - long term memory  
   CREAM  
   JND - just noticeable difference  
   HF - Human Factors  
   HSI  
   RSI

3. Name one result from Byrne’s paper that has implications for interface design.
   Study and know the user.

4. What are the ABCS?
   A - Anthropometric  
   B - Behavioral  
   C - Cognitive  
   S - Social
Please answer the following 20 questions — 5 points each, scaled to 25% of the course grade.

1. Give two payoffs for understanding users.
   "More widely used production...Market"

2. Less change to product later after users begin to use it. 5

2. Expand any 5 of the following acronyms:
   (more than 5 correct = 5, wrong ones count negative)
   
   UCD/HCD = Human centered design
   SDT = Statistical decision theory
   LTM = Long-term memory
   JND = Just noticeable difference
   HSI = Human-system interaction
   PQ4R = Post questions for review
   WM = Working memory
   CREAM = Cognitive, receptive, expressive, action
   HF = Human factors
   RSI = Reaction time short increment

3. Name one result from Byrne’s paper that has implications for interface design.
   One result is how users react to visual cues. It showed that users tended to respond more quickly to visual cues than to words or buttons that had to be deliberate. The words actually gave users a sense of what they were doing, and the buttons just triggered actions.
   4

4. What are the ABCS?
   Anthropomorphic
   Behavioral
   Cognitive
   Social
the difference between Internal validity and External validity

Internal validity focuses on aspects of validity that an individual cannot control (ignorance, cognitive error, etc.). The lack of validity is unintentional. External validity deals with circumstances such as an when an individual purposely provides false information.

10. Explain the Pop-out Effect. Give one application of this effect.

Objects that appear different in shape, color, etc. tend to stand out in a user’s visual perspective. 
In a website design, important information/text may be bold or red.

11. How can you help direct the user’s attention on a search engine?

Use less textual information and get rid of useless info. Make important info easy to recognize.

12. How can you help users make better decisions? (one major way)

Use appropriate size: gulf's of execution and evaluation. Undesirable tasks should have large gulfs of execution, and desirable tasks should have small gulfs. Also, provide feedback that’s easy to interpret.
5. One version of Fitts' Law is \( T = 70 \text{ ms} \times \log_2 \left( \frac{\text{target distance}}{\text{target size} + 0.5} \right) \). Note two implications for menu design.

- Put the menu all the way at the top or its side of a window.
- Do not offset menu from the edge, i.e. by 1px.

6. Note two advantages of haptic interfaces and two disadvantages.

  (+) Easy to use for deaf people
  (+) Easy to use for mute people

  (-) Costly to produce
  (-) Can not be as effective

7. Suppose you want to provide the user with real-time updates on outside temperature in a non-verbal format. Pick one of the following modalities and explain in 1-2 sentences why they are suited to this task: (a) Touch, (b) Sight, (c) Hearing.

  Sight: it would be easiest to read the temperature off of a display. You can obtain the info when you want it.

8. Describe the tradeoff between studying large and small numbers of users.

  Large numbers are often costly to study but you get more accurate results since it's a larger sample set.
  Small numbers are inexpensive but often it's only the "small picture"
17. Describe one way knowledge about the user can be organized besides the ABCS.

Knowledge can be organized by studying user errors and their causes.

18. Why are multiple-choice exams seen as easier than short answer exams?

Recognition is stronger than recall. Multiple choice provides more opportunity for recognition. Short answers rely more on recall.

19. Using terms from the ABCS, describe how distractions can disrupt learning.

Distractions can interrupt attention. Distraction can hinder encoding, retention, and recall.

20. What is the most important cognitive dimension to consider when developing smartphone applications, and why?

Role: Identity. Phone applications rely heavily on vision and visual perception so it's important that objects in the interface represent the outcome of a task logically. This makes the system easier to use.
13. Describe two implications of learning for interface design.

1) Commonly/frequently used interfaces can have a long time for the initial use.

2) Users' time to complete a task decreases w/ # of trials, and # of errors also decreases. 
   Task processes should be consistent, logical, and easy to learn.

14. Name two ways to study errors. and repeat.
   - Event trees  
   - Signal Detection Theory

15. Describe and draw the learning curve.

Users' time to complete a task decreases with more trials.

16. What can you learn by studying a log of searches?

Patterns of how people search and what they search for. This can help designers build better search engines.